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## Save Our Groundwater

P.O. Box 182, Barrington, NH 03825

November 23, 2005

Water Council  
c/o Harry T. Stewart, P.E., Director  
Water Division  
N.H. Department of Environmental Services  
29 Hazen Drive  
Post Office Box 95  
Concord, NH 03302-0095

05-21 WC

**RE: Notice of Appeal - New Sources of Bottled Water Conditionally Approved - Issued 10/25/05  
to USA Springs, Inc. under Env-Ws 389 by Brandon Kernen - Design Review # 994058**

Dear Mr. Stewart:

Please consider this submittal a Notice of Appeal of the decision of the Department of Environmental Services to "conditionally approve" a New Sources of Bottled Water permit to USA Springs, Inc. (The "Applicant") for wells located in Nottingham (the "Project"). Brandon Kernen, issued the approval on October 25, 2005 under Design Review # 994058. The wells are identified as USA-1, USA-2, and USA-4.

This Notice of Appeal is being submitted pursuant to NH Admin Rule Env-WC 203.03 on behalf of concerned individuals and property owners, many of whom live in the Nottingham, Barrington, and Northwood area, and many of whom are members of a citizens group called Save Our Groundwater (SOG). Moreover, SOG did submit written comments and received no responses to them. We then attempted unsuccessfully as stakeholders to participate with DES prior to the conditionally approved permit being issued.

The following relevant documents are attached hereto:

1. New Sources of Bottled Water Conditional Approval Letter signed by Brandon Kernen, DES-Water Supply Engineering Bureau and dated October 25, 2005 (attached hereto as Exhibit A).
2. SOG Letter Submitted to Brandon Kernen, DES-Water Supply Engineering Bureau during the Public Comment Period for Env-Ws 389, dated September 8, 2005 (attached hereto as Exhibit B).
3. 17-page Report prepared by ENSR International, a DES contractor hired to review both Env-Ws 389 and 388, dated March 19, 2003 and submitted to Brandon Kernen (attached hereto as Exhibit C).
4. 23-page Report issued to USA Springs of DES-Water Supply and Engineering Bureau's Decisions and Findings which includes the denial of the New Source of Bottled Water in accordance with Env-Ws 389.20, dated August 12, 2003 (attached hereto as Exhibit D).
5. Letters of August 24, 2005 and September 8, 2005 which include public comments from James Hadley to Brandon Kernen, (attached hereto as Exhibit E).
6. Capture Zone Map of Just Cause Containment Wells Impact to Abutting Properties-USA Springs, Inc. (attached hereto as Exhibit F).
7. DES Performance Partnership Agreement for FY2005-2007 (NHDES-R-CO-04-3) - Public Participation Policy (pgs. II-8 and II-9) & Environmental Data Quality Policy (pg. II-10), (attached hereto as Exhibit G).

## **Background**

By statute (RSA 21-O: 7-IV) the Water Council shall hear and decide all appeals from department decisions relative to the functions and responsibilities of the division of water other than department decisions made under RSA 482-A relative to wetlands, in accordance with RSA 21-O: 14. The Council "shall also consult with and advise the director of the division of water with respect to the policy, programs, goals, and operations of the division...with particular emphasis on long-range planning for the division and on education of the public relative to the functions of the division, on a continuing basis".

During the past two years we have become increasingly concerned with both the environmental deficiencies and change in culture that appears to have permeated throughout their leadership team and within certain divisions of the Department of Environmental Services. More specifically, while this Project was under the watch of former Acting Commissioner Dana Bisbee, DES's Public Participation Policy established during former DES Commissioner Robert Varney in December 2000 was working well for all stakeholders. Commissioner Bisbee's leadership team allowed stakeholder meetings to take place on an as-needed basis while this Project was under DES review.

The mission statement, overview and information contained in the Water Division's website may be similar today to when Commissioner Bisbee oversaw DES. However, DES's environmental stewardship appears to have deteriorated to a great degree. Beginning in November 2003 and continuing today, under the current Commissioner and his leadership team, several attempts for meetings under the public participation policy have been met with strict resistance from management from within both the Water Division and Waste Management Division.

According to the Water Division website, "the Drinking Water Source Protection Program provides regulatory and non-regulatory tools to protect groundwater and sources of public drinking water. The program is responsible for ensuring protection of new sources of drinking water as well as improving protection of existing sources. We work closely with water systems, municipalities, residents and organizations to ensure adequate quantity and quality of New Hampshire's drinking water".

DES's public participation policy is supposed to involve all stakeholders and be an essential component in department's decision-making process and is more fully described below.

For Federal Fiscal Years 2005 – 2007 there is a "Performance Partnership Agreement" between the U.S. Environmental Protection Agency – New England Office and the NH Department of Environmental Services (NHDES-R-CO-04-3). Contained within this agreement are several policies that are pertinent to this appeal. One is the "*public participation policy*" (see Exhibit G) established in December 2000 by the former DES Commissioner, Robert Varney. The purpose of this policy is supposed to allow for an "*early and on-going public involvement which enables DES to make more informed decisions, improve work quality through collaborative efforts, and build mutual understanding and trust between DES and the public it serves*".

One of the Goals of the "*public participation policy*" is for "*DES to provide data and analysis in a timely manner and in an understandable format to enhance the ability of stakeholders to participate constructively in the issues under consideration*". The public participation goals are based upon several basic principles. Several of the most important principles are as follows:

- *It "fosters greater public confidence in DES's programs". By "presenting information openly, evaluating issues and alternatives fairly, and following through on commitments builds credibility for the eventual outcomes".*
- *"Public participation helps advance DES's environmental equity policy. Timely opportunity for informed public participation is a key part of meeting the intent and purpose of Title VI of the Civil Rights Act {1964}, Presidential Executive Order 12898 of 1994 and DES's Environmental Equity Policy of September, 1994".*

- *"Public participation enhances mutual understanding. DES can better understand the effects of proposed actions on the public and the environment by hearing from those potentially affected. By responding to comments and questions, DES can help the public understand the technical aspects of a particular proposal, as well as the broader policy, political, and legal framework within which DES must make its decisions".*
- *"Public participation results in better decisions. It helps DES make informed decisions that take into account the public's views on, for example, legal, technical, environmental, economic, and social issues. When a decision acknowledges disparate views and provides reasons why other views were not accepted, it is more likely to be implemented more successfully".*
- *"Public participation generally enhances community support and minimizes delays. Providing the public with a voice in the process will likely help reduce concerns about a proposal. Public workshops, meetings, hearings, and other communications provide information and, in the process, help dispel rumors, fears and misunderstanding".*
- *"Public participation is most successful early in clearly defined planning and decision-making processes. It is important that DES personnel, other government officials, stakeholders, and the general public be integrated into the planning activities and decision-making processes at an early stage".*
- *"Public participation can be enhanced by creating stakeholder advisory groups. DES recognizes that soliciting advice from stakeholders with knowledge and expertise in particular fields can be beneficial to developing viable state programs and regulations. This is particularly valuable in helping DES to address significant public policy issues, environmental initiatives, and regulatory requirements".*
- *"Public participation involves a variety of communication tools. It is necessary to use a full range of tools to engage the public".*

Although the public comment period on this application was originally limited to a short period of time, we were able to successfully garner an extension of time from the Governor's office and DES, which allowed us to submit substantive comments. Unfortunately, when we requested DES to hold a stakeholder meeting Brandon Kernel denied us on September 30, 2005. A second request was made on October 6, 2005 to Brandon Kernan with no response until more than two weeks later on October 22, 2005 saying again that no stakeholder meeting will be held. However, Mr. Brandon stated that if SOG Board Member, Jim Hadley wanted to meet individually with him, it would have to be on the following Monday (October 25<sup>th</sup>). This was a similar situation when a stakeholders meeting was attempted to be set up on two occasions in November 2003 when our request was also denied.

Another policy contained within the DES/EPA Performance Partnership Agreement is the *environmental data quality policy* (see Exhibit G) established in June 2001 and revised in December 2004. This policy states that *"DES relies upon many types of data that enable it to better evaluate existing environmental conditions, to identify and understand areas of concern, to assign responsibility for those areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences".* The key purpose of this policy is that *"the data DES uses must be credible, of known quality, and the quality and quantity of that data must be appropriate for its intended uses. To accomplish this, everyone at DES must understand how his or her activities affect data quality issues, and all staff must know what they have to do to help produce quality data".*

**Since the first application submitted by USA Springs for a New Source of Bottled Water was denied by DES on August 12, 2003 in accordance with Env-Ws 389.20 for so many deficiencies as described in Exhibits' B through E, we believe the October 25, 2005 approval was premature. With so many critical issues still unresolved, especially those articulated by SOG, and ENSR International, the DES contractor hired specifically to provide technical support to DES in review of applications for Large Groundwater Withdrawal Permits. Rather than to repeat all of the outstanding issues, we ask that you review the Exhibits B through E as attached, including the DES original denial letter of August 12, 2003.**

### **Administrative Efficiency**

DES has issued a conditional approval for the New Sources of Bottled Water Permit to USA Springs, Inc. prematurely as a decision is still pending before the NH Supreme Court regarding the department's issuance of a large groundwater withdrawal permit to the company in July 2004. The court held a hearing September 15, 2005 and a decision is expected within approximately four months. Without the large groundwater withdrawal permit, the company is not allowed to pump the water and the "conditional" New Sources of Bottled Water permit is moot.

Rather than engaging the public and municipalities in an additional appeal, involving additional legal fees, copying costs and personnel time, and in the interests of administrative efficiency, the DES simply needed to wait on the New Sources of Bottled Water permit until the Supreme Court issues their judgment. Considering the fact that DES had the company's information for the New Sources of Bottled Water permit application in their files since Summer 2005 without taking action, one wonders why DES chose to issue the permit just one day before the Nottingham Planning Board was expected to take a widely-publicized vote on the company's site plan review in October 2005.

### **Save Our Groundwater (SOG)**

SOG is an all-volunteer community organization representing residents of Barrington, Nottingham, Northwood and other persons directly affected by this permit.

SOG hereby adopts as its own, and incorporates by reference as fully as if set forth in full in this motion, each and every objection and basis for rehearing set forth in the Motions filed in this matter by the Town of Nottingham, the Town of Barrington, James Hadley and Steve Conklin in accordance with the provisions.

### **I. Identity of Persons Moving for Reconsideration**

The Board of Directors for Save Our Groundwater are the persons moving for reconsideration and they are as follows:

James Hadley  
PO Box 104  
W. Nottingham, NH 03291

Denise Hart  
291 France Road  
Barrington, NH 03825

Bill McCann  
20 Fisher Street  
Dover, NH 03820-3943

Pat Newhall  
35 Wood Road  
Barrington, NH 03825

Olivia Zink  
980 South Street  
Portsmouth, NH 03801

In addition to the above-mentioned board members, it is important to note that more than 1,200 individuals have signed petitions "asking that all state and local officials to deny all permits related to this project." A list of SOG members who are abutters and stakeholders is available on request.

**II. Statement of reasons why the New Sources of Bottled Water Conditionally Approved Permit should not have been issued and should be withdrawn and re-evaluated in light of additional necessary information from the Applicant:**

The Department may only issue a New Sources of Bottled Water permit (with or without conditions) if the division determines that the Applicant is in compliance with Env-Ws 389. The clear intent of the state statutory schemes is to protect water quality and prevent contamination, rather than merely address remediation. The purpose of RSA 485-A is "to protect water supplies, to prevent pollution in the surface and groundwaters of the state and to prevent nuisances and potential health hazards." RSA 485-A:1. To fulfill this purpose, the State has enacted surface water quality standards designed to protect our water resources. See RSA 485-A:8; Env-Ws 1700.

During the 30-day public comment period (August 10 through September 9, 2005) SOG, the Town of Nottingham, James Hadley, Steve Conklin, et al submitted written testimony that brought serious concerns to the Division's attention regarding the potential impacts to water quality. Moreover, the report filed by ENSR raises serious additional concerns that need to be more carefully reviewed. Dr. James Vernon, the project manager who filed the report indicated that his contract was not renewed because then Governor Benson did not want outside experts reviewing DES's work on this project.

The Nottingham Board of Selectmen hired UNH professor, Dr. Tom Ballestero as a consultant for the past few years to provide expert research and reports on this Project and to determine what, if any, adverse impacts will occur as a result of the large groundwater withdrawal from a confined bedrock aquifer. His technical comments are attached to Nottingham's testimony submitted by their attorney, Tupper Kinder and dated August 25, 2005 and should be reviewed by the Council. For example:

"The Selectmen are concerned that the presence of certain chemicals including radionuclides, identified in the groundwater quality results from the pumping test, have not been adequately addressed or discussed by the applicant with respect to compliance with water quality standards." DES noted: "In USA Springs case, for example, Radium 226+228 exceeded drinking water standards set forth in Env-Ws 315.60 in the sampling conducted in October 2002...."

In Attorney Kinder's letter for Nottingham, he continues, "DES concluded that it was unclear if groundwater will meet standards without treatment. This calls into question how radionuclides residuals from treatment (if necessary) will be managed. Thus, it is unclear to the selectmen the extent to which the presence of elevated concentrations of certain chemicals in USA Springs' water may require removal of these contaminants, how residuals will be managed, and also the extent to which pumping of the bedrock aquifer may cause the movement of these elevated levels within the aquifer. It is also unclear whether baseline water quality in private wells has been adequately established. This issue has not been adequately addressed in the application."

"In conclusion, the Nottingham Selectmen believe that since the application for anew groundwater source of bottled water relies on the fatally flawed pumping test conducted in November 2002 and upon data which fails to present a reasonably reliable hydrogeologic model, the application before DES does not satisfy the requirements for approvals set in Env-Ws 389.04. Specifically, the applicant has not complied with the following requirements:

1. Env-Ws 389.07 – the applicant has failed to develop an accurate conceptual hydrogeologic model of the wellhead protection area.
2. Env-Ws 389.15 – the applicant has failed to accurately define the wellhead protection area.
3. Env-Ws 389.11 – the applicant has failed to accurately evaluate the source including the chemical quality of the source
4. Env-Ws 389.12 – the applicant has failed to establish a reasonable permitted production volume.
5. Env-Ws 389.19 – the applicant has failed to produce an adequate report.

Dr. Tom Ballestero also submitted some comments on behalf of the Nottingham Selectmen, which should be reviewed by the Council and are attached to the submission filed by Attorney Kinder for Nottingham.

As discussed below, we believe there are serious issues related to the fairness of this conditional approval being given without the ability of critical stakeholders to be a part of this permitting process. There is a significant information gap in the record related to water quality issues that currently exist. Thus, the requirements of Env-Ws 389 have not yet been met.

The purpose of this letter is to:

1. Request that the Water Council withdraw the conditional Env-Ws 389 permit.
2. Request DES to further engage in fact-finding regarding the Applicant's flawed application.
3. Require the Applicant to submit all further information necessary for DES to fully evaluate the potential for violations of surface and groundwater quality standards.
4. Reconsider its issuance of the conditional approved permit in light of such further information to determine what regulatory gaps may exist.
5. Determine what additional conditions should be included in a conditional approved permit to address such gaps.
6. Direct DES to either issue a modified conditional approved permit or deny the permit, as appropriate, after such re-evaluation.
7. Request that the Council not allow waivers to be given when they are unallowable under the rules.
8. Request that the Division follow the requirements of their Performance Partnership Agreement and meet with the stakeholders as requested, and on an as-needed basis.

The site, which is the subject of the aforementioned conditionally approved permit, is 100 acres, 80 of which are situated in Nottingham and the remainder in Barrington. The site contains primary wetlands in Barrington and critical wetlands in Nottingham. It is also located directly over primary and secondary recharge areas for the Little River Watershed which is hydrologically connected to the Lamprey River. The Lamprey was Congressionally designated into the National Wild & Scenic Rivers System pursuant to Public Law 90-542, the National Wild & Scenic Rivers Act in 1990.

According to Jamie Fosburgh, Northeast Rivers Program Manager for the National Park Service (NPS), legislation designating the Lamprey as a component of this system also specifies that the NPS coordinate its management responsibilities with the Lamprey River Advisory Committee established under NH RSA 483 – the NH Rivers Management and Protection Act, and manage the river in accordance with the Lamprey River Management Plan dated June, 1995. This Plan serves as the Management Plan for both state and federal designations.

Also, according to the NPS, the Wild and Scenic Rivers Act, the NH Rivers Management and Protection Program, and the Lamprey River Management Plan (Plan) which relates to both statutes, all recognize the fundamental necessity to preserve and protect instream flows as a critical aspect of preserving the values for which the Lamprey was designated into the respective state and federal programs. The Plan specifically recognizes the critical nature of summer low flow periods, as do the Instream Flow Rules adopted for the Lamprey under the NH Rivers Management and Protection Program. Further, the imperative to protect adequate instream flows on designated rivers is one of the strongest and most significant features of the NH Rivers Management and Protection Act. As stated on the NH DES' website, "The Act gives the Department of Environmental Services the authority and responsibility to maintain flow to support instream public uses in rivers that have been designated by the Legislature for special protection under RSA 483."

It is specifically the impact of the proposed large groundwater withdrawal to the summer low flows of the Lamprey that concerns the NPS the most as indicated in a letter to DES dated May 21, 2004. Furthermore, the Lamprey River Advisory Committee (LRAC) never received a response to the comments and questions outlined in their September 13, 2001 letter to DES. According to the LRAC in a letter to DES dated May 10, 2004 states, "data presented, irrefuted by scientific analysis, indicates that area groundwater most likely feeds directly and perhaps exclusively into the Little River, a major tributary to the Lamprey. At the withdrawal volume proposed, the Little River could be expected to be dry during low flow periods, depriving the Lamprey of up to 12% of its flow".

The LRAC also states that "in dry periods, the Lamprey's flow consistently drops below 7Q10. During these periods, the river is relied upon almost exclusively by the Town of Durham and University of New Hampshire as a water source. A lowering of flows in the Lamprey would severely limit the ability of the town and University to use their own water source". The LRAC had requested as far back as September 13, 2001 that certain information be acquired before a decision is made on this project. A requested Feasibility Study to guarantee that there is no adverse impact on the Lamprey River's water levels, hydrology or water quality was never required by DES.

Another issue that has not been adequately addressed according to the LRAC is the contamination of the water supplies of Barrington, Nottingham, Lee and Northwood could lead to potential over-reliance on impoundments and tributaries in the Lamprey watershed by those towns. For this reason we feel that the feasibility study should assure that plumes from hazardous waste sites do not migrate toward are aquifers.

The Little River Watershed contains no high-yielding stratified-drift aquifers. Rather, slow-recharging bedrock aquifers have underlain this whole area which is vulnerable to contamination from both known and unknown sources. It is also a major source of drinking water for hundreds of private homes and small businesses.

### **III. Facts and Law upon which the Council should rely in granting relief.**

The general facts and the laws and regulations relevant to our Appeal are set forth in Section II of this Letter, as well as in the documents referenced at the beginning of this letter, which are attached hereto and incorporated herein by reference. The Department's record regarding this conditionally approved Permit contains more detailed information, including the Applicant's application, supporting materials, written public comments and testimony.

### **IV. Statement of the specific relief or ruling requested.**

For the foregoing reasons, we request that the Council:

- (1) Withdraw the Conditionally Approved Env-Ws 389 Permit and request the Department to engage in further fact-finding regarding the Applicant's flawed application(s).
- (2) Require the Applicant to submit all further information necessary for the Department to fully evaluate the potential for violations of surface and groundwater quality standards (i.e. uranium, radionuclides, TCE, etc.)
- (3) Require the Applicant to conduct another pump test as recommended by Dr. Tom Ballestero, on behalf of the Nottingham Selectmen for at least eight days with well sampling taken periodically during this time period. According to Dr. Ballestero, "one day of pumping is clearly insufficient to demonstrate that the chlorinated contaminants are not still in the bedrock aquifer nor emanating from below the source area."
- (4) Reconsider its issuance of the conditional approved permit in light of such further information to determine what regulatory gaps may exist and determine what additional conditions should be included in a conditional approved permit to address such gaps.
- (5) Direct DES to either issue a modified conditional approved permit or deny the permit, as appropriate, after such re-evaluation.
- (6) Request that the Council not allow waivers to be given when they are unallowable under the rules.

- (7) Request that the Council direct the division to follow their "public participation policy" and to meet with the specific stakeholders (e.g. SOG, Dr. Tom Ballesterio on behalf of the Nottingham Selectmen, Dr. James Vernon from ENSR International, Steve Conklin, P.E. from Barrington, etc). The Council is charged with advising the director of the division of water with respect to the policy, programs, goals, ... of the division ...with particular emphasis on ... education of the public relative to the functions of the division, on a continuing basis." **The public needs to be involved.**

**V. Decision which is the subject of this Motion.**

A copy of New Sources of Bottled Water Conditionally Approved Permit Issued 10/25/05 to USA Springs, Inc. under Env-Ws 389 by Brandon Kernen – Design Review # 994058 is attached hereto as Exhibit A.

**CONCLUDING STATEMENT**

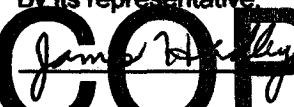
This conditionally approved Permit authorizes the Applicant to proceed with the largest bedrock extraction in the history of New Hampshire for private purposes and primarily for the exportation overseas with no public good for the surrounding communities. The proposed Project will create significant environmental impacts with far-reaching ramifications. When the Department denied the first application on August 12, 2003 for 27 different scientific reasons, it should not have reduced the requirements of Env-Ws 389 down to only minimal requirements. In light of the foregoing, the likelihood that this Project will lead to violations of State surface water quality standards should be subject to heightened scrutiny, and the Department should be working with the impacted communities and taking every precaution to protect the public from the adverse impacts expected to result from the proposed Project.

However, the Department is lacking some critical information, which prevents it from making a fully informed determination that the Applicant has met all relevant criteria of regulations contained within Env-Ws 389. It is contrary to federal and state laws and regulations and the Department's own rules, contrary to the public interest, and arbitrary and capricious, to issue a conditional approved Permit without giving full consideration to all of the issues brought forward by several of the stakeholders. Accordingly, we urge the Council and the Department to withdraw the conditional approved Permit, reconsider the Department's decision, require the Applicant to submit all relevant information necessary for to fully evaluate the potential for violations, and reconsider the Permit in light of all of the information submitted to determine what additional conditions are necessary for a Permit to meet applicable regulatory criteria, or whether a Permit is legally appropriate for this Project.

Respectfully submitted,

Save Our Groundwater

By its representative,

  
James H. Kelly

Member, Board of Directors, Pro Se

PO Box 104  
West Nottingham, NH 03291

(603) 942-5630

Enclosure

Cc: Governor John H. Lynch  
 DES Water Division Director Harry T. Stewart  
 DES Commissioner Michael P. Nolin  
 Leah Keller, NH-HHS Bottled Water Program Administrator  
 Board of Selectmen – Town of Nottingham  
 Board of Selectmen – Town of Barrington  
 Board of Selectmen – Town of Northwood  
 EPA, Region One, Robert Varney, Administrator (Public Participation / Environmental Equity Policy)  
 EPA, Region One, Office of Environmental Justice, James Younger, Director  
 Francesco Rotundo, USA Springs, Inc.

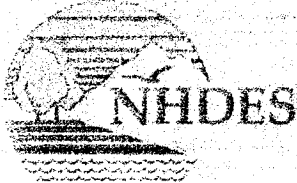
### **Certificate of Service**

I hereby certify that copies of the foregoing Save Our Groundwater's Notice of Appeal have been forwarded this day, November 23, 2005, by first-class mail, postage prepaid, to Tony Soltani, Esq., E. Tupper Kinder, Esq., Mark Beliveau, Esq., and Assistant Attorney General Jennifer Patterson.

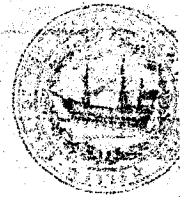
Save Our Groundwater

By its representative,

By   
 James Varney



The State of New Hampshire  
**Department of Environmental Services**



Michael P. Nolin  
Commissioner

October 25, 2005

Mr. Francesco Rotondo  
President  
USA Springs, Inc.  
9 Regis Drive  
Pelham, New Hampshire 03078

**Subject: New Sources of Bottled Water: Bedrock Sources USA-1, USA-2, and USA-4**

Dear Mr. Rotondo:

The purpose of this letter is to conditionally approve (see conditions) wells identified as USA-1, USA-2, and USA-4 as sources of "well water" for bottled water in accordance with Env-Ws 389. The New Hampshire Department of Environmental Services (DES) finds that the following documents demonstrate that the criteria specified by Env-Ws 389.20(a) for approving new sources of bottled water have been complied with:

- 1) Report titled "Application for Approval of New Groundwater Source of Bottled Water - Proposed USA Springs Bottling Plant" dated June 6, 2005 and documents referenced by this report;
- 2) Water quality data dated July 27, 2005 from MyKroWaters, Inc.; and
- 3) Letter dated August 3, 2005 from MyKroWaters, Inc. which provided additional information regarding groundwater sample collection methodology.

Approval for a bottled water product must also be obtained from the Department of Health and Human Services' (DHHS) Beverage and Bottled Water Inspection and Licensing program in accordance with DHHS regulations He-P 2100, Bottled Water. A source classification statement that identifies the wells USA-1, USA-2, and USA-4 as sources of "well water" in accordance with Env-Ws 389.14 will be forwarded by DES to DHHS. All results of the laboratory analyses for water samples collected from USA-1, USA-2, and USA-4 will also be forwarded by DES to the DHHS Beverage & Bottled Water Inspection & Licensing program. You should contact Leah Keller of DHHS at 271-4673 for further information on these approval requirements.

### Conditions

1. Prior to initiating bottled water operations, each well must be disinfected and well water samples collected and analyzed for bacteria after appropriate purging of disinfected water. Analyses must demonstrate that total coliform is "absent" from each well prior to use as a bottled water source.
2. Permitted production flow rates and operating parameters for each well are defined in Large Groundwater Withdrawal Permit LGWP-2004-003. The sanitary protective radius for each well shall be established as shown on the plan titled "General Site Plan" as submitted with the June 6, 2005 report.
3. The wellhead protection area shall be established as shown in Figure 3-15 of Gradient's August 12, 2003 submittal and as shown in the June 6, 2005 report on a figure titled "NH Department of Environmental Services Well Siting Inventory for: USA Springs, Inc-145 Old Turnpike Road, Nottingham, New Hampshire".
4. To operate USA-1, USA-2, and USA-4 as sources of bottled water, USA Springs shall comply with the Water Conservation Plan dated August 5, 2005 in accordance with Env-Ws 390. Item 5 of the plan shall be modified to require that all automatic watering devices used for landscape irrigation be equipped with technology that will prevent the systems from starting automatically and that will shut down the systems when not needed, such as in rain storms.
5. USA Springs shall collect separate water samples from USA-1, USA-2, and USA-4 once every 30 days for the first year of operation (after bottled water operations initiate) for volatile organic compounds. The results of these tests must be reported to DES within twenty-one days of collecting the water samples. The water quality data obtained from sampling USA-1, USA-2 and USA-4 must verify that anthropogenic contamination in the groundwater is absent or at concentrations below Ambient Groundwater Quality standards for New Hampshire.
6. Water quality data for samples collected from the wells and submitted to the DES during the new source approval process indicate that several naturally occurring constituents are present in the well water. Treatment or blending may be required to meet the applicable drinking water standards in order to obtain approval from DHHS. If treatment is required for DHHS approval: (a) any discharges of backwash water or other wastewater must comply with the requirements of Env-Ws 1500; (b) any surface water discharges must comply with the federal Clean Water Act requirements; and/or (c) the transportation and disposal of waste solids or liquids derived from the removal of naturally occurring radionuclides must comply with DHHS radiological health regulations and any other applicable federal and state laws governing the handling, transportation and disposal of low-level solid or liquid radioactive material.

Francesco Rotondo

USA Springs - New Source of Bottled Water

October 25, 2005

Page 3 of 3

Any appeal of this decision must be to the Water Council in conformance with the requirements Env-WC 200. Appeals must be filed within 30 days of the date of this decision. Inquiries regarding appeal procedures should be directed to Mr. Michael Sclafani, DES Council Appeals Clerk, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095; telephone (603) 271-6072.

Please contact me at 271-0660 or [bkernen@des.state.nh.us](mailto:bkernen@des.state.nh.us) with any questions.

Sincerely,

**COPY**

Brandon Kernen, P.E.

Hydrologist

Water Supply Engineering Bureau

cc: M. Nolin, DES Commissioner  
L. Keller, DHHS  
Board of Selectmen - Town of Nottingham  
Board of Selectmen - Town of Barrington  
Board of Selectmen - Town of Northwood  
E-mail Project Distribution List

\\ASWP\New Sources\BOTTLED\USA SPRINGS02\USA Springs05a.doc



## Save Our Groundwater

P.O. Box 182, Barrington, NH 03825

September 8, 2005

Brandon Kernen  
NHDES-WSEB  
PO Box 95, 29 Hazen Drive  
Concord, NH 03302-0095

**RE: USA Springs Request for Approval of Groundwater Sources of Bottled Water (Env-Ws 389)**

Dear Mr. Kernen:

This letter represents our comments pertaining to USA Springs Application for New Sources of Bottled Water under Env-Ws 389. As you know DES hired ENSR International to conduct a detailed review of its original Application Report, dated February 3, 2003. Their review of regulations pertained to both Env-Ws 388 and Env-Ws 389 and was provided to DES in a 17-page report, dated March 19, 2003. We believe, based on that review coupled with the deficiencies contained in the current application that this application is premature, not in compliance with Env-Ws 389 and should be denied.

Based on their comments, it appears that many of their observations are still unresolved. For example, "ENSR believes that there are serious questions concerning the site, the proposed withdrawal and the report". Also, they report that USA Springs failed to provide pre-test water level and water quality data for monitoring wells to DES before the pumping test. Moreover that this represents a risk that the test procedures and related aspects of the investigation might not be adequate.

The bottled water regulation (Env-Ws 389-17) requires the establishment of a contamination control program for known sources of contamination. This applies if the contamination occurs within the Source Water Protection Area (SWPA). Env-Ws 389.17(b) requires that the contamination control program "shall include provisions and a schedule for remediation and/or monitoring of residual contamination from all known contamination sources within the SWPA which ensures that contamination shall not reach the groundwater source of bottled water."

The contamination control concept described is very general and is not sufficiently supported for DES to evaluate its potential efficacy. Given the challenges inherent to this particular scenario, significant risks are expected to remain, even when a more detailed program is proposed and extensive testing is required. Groundwater contamination is still present in the bedrock aquifer, and the evidence presented in the Report is not sufficient to determine that an adverse impact to other water supplies will not occur, due to excessive pumping of the USA Springs' wells.

We support ENSR's conclusion that "the current lack of contaminant distribution information precludes a confident prediction that the contamination can be effectively isolated and/or remediated. The hydrogeological complexities of the site, combined with the proposed water withdrawals, make achieving

effective containment or remediation very challenging'. Moreover, some contaminants, such as degreasing solvents, including trichloroethylene (TCE) which was found in the same aquifer as the USA Springs wells, tend to sink beneath the water table. Also, according to DES, "these contaminants may form small pools, which are hard to locate in the aquifer and which may continue to contaminate groundwater for decades."

The adjoining property at 155 Old Turnpike Road is thought to be a potentially significant source of contamination, and it lies west of the pumping wells. It also is reported to have east-west fractures passing through the area of concern that may intersect one or more of the pumping wells. Thus, these points support the likelihood of a hydraulic connection between the pumping wells and the adjoining site. According to ENSR, 'characterization, transport prediction under ambient or pumping conditions, and remediation of contamination in fractured bedrock are known to be challenging."

Env-Ws 389.18 requires that wells to be used as bottled water sources comply with We 600, "Standards for the Construction, Maintenance and Abandonment of Wells." This rule (We 602.02(f)(6) requires that "The void outside the casing shall be filled with cement grout, bentonite or ledge drillings or cuttings." Drive shoes are also required when steel casing is used. The well logs in Appendix E for USA-1; -2, and -4 do not contain this information. If the void spaces were not filled as required and drive shoes were not used, the wells do not meet the regulatory requirements for approval as bottled water sources. If the void spaces were filled as required and drive shoes were used, proper Well Completion Reports or well logs that show this need to be submitted.

Env-Ws 389.20 contains criteria for determining if a proposed source of water must be approved or denied. Specifically this rule states the following:

*Notwithstanding Env-Ws 389.20 (b) and (c) below, upon determining that the report required in accordance with Env-Ws 389.19 contains all the required information, that is correct and complete, and that all specified requirements of Env-Ws 389 and We 600 have been met, the department shall approve the source and notify the applicant and the department of health and human services that the source has been approved.*

*If the report is deficient in any of the criteria in Env-Ws 389.19, the applicant shall be notified in writing.*

*The proposed source shall be denied under the following conditions:*

*If an inadequately controlled contamination source is present in the source water protection area; or  
If the applicant has failed to perform any of the activity or to meet any of the requirements contained in these rules.*

**The application does not contain all of the information required by Env-Ws 389.19 and therefore must be denied in accordance with Env-Ws 389.20(c)(2).**

**There are uncontrolled sources of contamination that exist in the source water protection area and therefore must be denied in accordance with Env-Ws 389.20(c)(1).**

**The information in the report produced in accordance with Env-Ws 389.19 is not complete or correct as required by Env-Ws 389.20(a).**

In USA Springs case, Radium 226+228 exceeded drinking water standards set forth by Env-Ws 315.60 (which is referenced by Env-Ws 389.1(c)(3)(c) and 389.22) in the sampling conducted in October 2002.

These results should be assessed to determine if groundwater derived from the pumping wells will meet drinking water standards or require treatment. Also, many of the results of water quality sampling conducted in September 2000 and October 2002 indicate that groundwater obtained from USA Springs wells exhibit elevated concentrations of iron and manganese. Based upon the sampling results, it is unclear if groundwater derived from USA-1, USA-2 and USA-4 will require treatment to continuously meet safe drinking water standards to meet the objectives of Env-Ws 389.1(b)(3) or (4).

Regulated contaminants as defined by Env-Ws 389.03 exist in both the source water protection area and estimated zone of influence as delineated within the application. The contaminants present include those regulated by the Safe Drinking Water Act – RSA 485 as well as the Groundwater Protection Act – RSA 485-C. The contamination on-site is present in the shallow overburden aquifer, deep overburden aquifer, and in the bedrock aquifer. The application does not contain the information necessary to meet the requirements of Env-Ws 389.20© or Env-Ws.389.17, which are applicable, when contamination exists in the source water protection area.

The application also does not provide conclusive information regarding the source of the contamination, and the vertical and horizontal extent of the contamination, and thus putting forth technically defensible remediation designs is not possible. Given that the known contamination in the zone of influence associated with USA Springs withdrawal exists off-site, there is no assurance that the migration to the pumping wells and all of the residential wells and small businesses that tap the same bedrock aquifer will not be adversely impacted.

The operation of the large withdrawal from bedrock at USA Springs in close proximity to VOC contamination is further complicated by preferential fracture flow, the interconnectivity of the overburden and bedrock aquifers, and the number and proximity of private water supply wells installed in the bedrock aquifer in the zone of influence of the proposed withdrawals. USA Springs proposed pumping wells are installed in the deep bedrock aquifer, and therefore the pumping of these wells will draw water from a fracture network in the bedrock and from the overlying overburden aquifer. Most of the residential wells surrounding the USA Springs site and in the zone of influence delineated in the application also obtain water from wells installed in the shallow or deep bedrock aquifer.

While the pumping of USA Springs wells will be depressing the water table in the deep overburden, shallow bedrock aquifers, and deep bedrock aquifer, it will be very difficult to contain the contamination in the overburden and bedrock aquifers without adverse impacts occurring. Furthermore, the vertical control of contaminant migration is further complicated by the fact that the contaminants of concern are chlorinated organic compounds with a density greater than water, meaning that over time they will migrate in a downward vertical direction. Thus, the application does not provide a convincing argument that contamination is insulated from the water bearing fractures of USA Springs production wells.

Although Env-Ws 389.11(f) requires that all procedures for collecting water quality samples from the monitoring and residential wells be provided, this information was not included in the application. As you know sample collection techniques can significantly affect the concentration of volatile organic compounds in a groundwater sample from a given monitoring point. Thus, this data must be included to determine if the data is of sufficient quality and to assess water quality sampling results relative to multiple sampling events or from one monitoring point to another during a given sampling event. Thus, the information in the report produced in accordance with Env-Ws 389.20 is not complete and correct.

In your May 25, 2005 letter to MyKroWaters in which copies were sent to the towns of Nottingham, Barrington and Northwood, you state that, "Where a town or another entity believes a given activity is or could adversely impact water quality, such information should be reported to the DES". Please consider

this as notification that we believe the proposed large groundwater withdrawal of about 112 million gallons of water per year from a confined bedrock aquifer where known contaminants currently exist will mobilize the fate and transport into a wider area of the aquifer and watershed.

The application contains insufficient information to demonstrate that an adverse impact will not occur due to the alteration of the flow of contaminated groundwater. The alteration of contaminated groundwater flow would likely result in the immediate and, for all practical purposes, irreversible contamination of groundwater that is also utilized by other private water users. We support DES's conclusion in their August 12, 2003 letter to the applicant, "although all groundwater contamination can ultimately be remediated the term 'irreversible' is determined to be applicable to this scenario because remediation can take years to decades to complete".

It is ironic that there is no mention in the June 6, 2005 Application for Approval of New Groundwater Sources of Bottled Water prepared by MyKroWaters of any groundwater quality results for uranium. Given that all of the USA Springs wells tested high for uranium in 2002 it would stand to reason that updated samples would be tested and be a part of the current application. However, no results of uranium samples were shown.

The uranium results submitted by Gradient Corporation in their report dated February 2003, show that USA-4 well tested at 12.3 on September 4, 2002 and increased to 90 on November 27, 2002 which was the ninth day of the 10-day pump test. New Hampshire's Maximum Contaminant Level (MCL) for drinking water is currently at 15 for uranium. Thus the reading of 90 is 500% higher than drinking water standards. USA-2 well tested at 30 on September 4, 2002 for uranium and dropped to 17.9 on November 27, 2002. However, both results were above the standards with the first being 100% above them. USA-1 well tested at 23 on September 4, 2002 and dropped to 16.8 on November 27, 2002. Again, both results were above standards with the former being 53% greater. We formally request that DES not grant any waivers within this application on water quality issues.

Given that there are still important issues separate from the Env-Ws 389 process yet to be decided, it would seem to be in the interest of administrative efficiency that DES not take any action on this application until the New Hampshire Supreme Court makes its determination on whether the conditional permit issued on July 1, 2004 was properly promulgated. Although oral arguments will be heard on September 15, 2005 a decision is not expected until December at the earliest.

Also, on August 11, 2005 Governor John Lynch requested the Army Corps of Engineers to review the general wetlands permit issued by DES in May 2005 and to require that a "individual" federal permit be required given the public interest factor coupled with the concerns of the National Park Service and other stakeholders. Although you had mentioned processing this application within 30-45 days from the close of the public comment period, we urge you to reconsider based on the extenuating circumstances associated with this project. There is no need to rush the processing of this application other than for political expediency.

Your cooperation on this important matter will be appreciated. If you have any questions or need clarification, please do not hesitate to contact us.

Sincerely,

 **COPY**

Save Our Groundwater, Board of Directors

Jim Hadley, Denise Hart, Bill McCann, Patricia Newhall and Olivia Zink

cc: Robert Varney, EPA Administrator, Region One  
Frank Delgiudice, Chief, Permits/Enforcement Branch, Army Corps of Engineers, New England  
Towns' of Nottingham, Barrington and Northwood  
Alice Chamberlin, Governor Lynch's Environmental Policy Advisor  
Senators' Richard Green, Jack Barnes and Iris Estabrook  
Cynthia Copeland, Strafford Regional Planning Commission

Exhibit C



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March 19, 2003

Mr. Brandon Kernen  
New Hampshire Department of Environmental Services  
6 Hazen Drive  
P. O. Box 95  
Concord, New Hampshire 03302-0095

**RE: Comments regarding USA Springs' Large Groundwater Withdrawal Permit  
Application dated February 3, 2003, ENSR Project Number 10154-001**

Dear Mr. Kernen:

ENSR International (ENSR) presents these comments to the New Hampshire Department of Environmental Services (NHDES) under our contract (signed by NHDES 1/9/02) to provide technical support to the NHDES in review of applications for Large Groundwater Withdrawal Permits. The comments apply to USA Springs' "Large Groundwater Withdrawal Permit Application Report, Proposed USA Springs Bottling Plant" (dated February 3, 2003), which consists of three volumes (Volume I, Text, Tables, and Figures; Volume II, Appendices A through G; and Volume III, Appendices H & I) (hereinafter Report). ENSR received the Report from NHDES on 2/6/03. The current review constitutes part of Task 4 in ENSR's approved Scope of Work for the USA Springs Large Groundwater Withdrawal Permit application.

## **1.0 INTRODUCTION**

### **1.1 Scope of ENSR Review**

ENSR has conducted a detailed review of the Report relative to the "Major (Large) Groundwater Withdrawal" regulation Env-Ws 388. ENSR has also reviewed the report relative to the "Groundwater Sources of Bottled Water" regulation (Env-Ws 389). Env-Ws 389 also references Env-Ws 379 (Site Selection of Large Production Wells for Community Water Systems) regarding specific pumping test requirements. ENSR's review relative to Env-Ws 379 has been limited to the specific elements of the regulation referenced in the bottled water source regulation (Env-Ws 389). ENSR has not reviewed the Report relative to New Hampshire Department of Health and Human Services regulation of bottled water. ENSR's review regarding wetlands has been limited to hydrogeologic aspects of possible wetlands impacts due to pumping the wells, per Env-Ws 388.

The present letter includes ENSR's findings regarding the VOC contamination and also documents a broader suite of items concerning USA Springs' application. ENSR's conclusions are based primarily on written, graphical, tabular, and map representations presented in the Report.



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### **1.2 Professional Consideration**

ENSR recognizes the responsibilities associated with critiquing the work of other professionals. ENSR realizes that almost all consulting reports may contain some elements that another professional could find fault with, and that certain aspects of hydrogeological studies are open to interpretation; professional hydrogeologists can reasonably disagree, in some cases. ENSR acknowledges that USA Springs' consultants have conducted a large amount of hydrogeologic work in a complex hydrogeologic setting for a highly scrutinized and controversial project. However, ENSR believes that there are serious questions concerning the site, the proposed withdrawal, and the Report.

### **1.3 Organization of This Letter**

ENSR has focused (Sections 2.1 through 2.5 of this letter) on items that relate directly to the regulations involved and the decision that the NHDES must make as to whether to grant permits. In addition, ENSR identifies (Section 2.6 of this letter) smaller items or items that may relate only indirectly to permit decisions, because it may be useful for NHDES to be prepared for technical objections that may be raised by project opponents.

### **1.4 Project Background**

The USA Springs site is located at 145 Old Turnpike Road (U. S. Route 4) in Nottingham, New Hampshire (Tax Map 3, Lot 10). USA Springs is seeking a Large Groundwater Withdrawal Permit for 215 gallons per minute (309,600 gallons per day), combined, from three bedrock wells, USA-1, USA-2, and USA-4, located at the site.

ENSR assumes (although the Report does not specifically state) that USA Springs also intends this Report to constitute an application to approve wells USA-1, USA-2, and USA-4 as bottled water sources. USA Springs has included a "Source Classification Statement", one of the items required for bottled water source approval, in Appendix A. Many other requirements for bottled water source approval overlap with requirements for Large Groundwater Withdrawal permitting, as discussed below.

ENSR has previously provided technical support to the NHDES in connection with the USA Springs project. ENSR's previous activities have included review of previous reports and pumping test plans by current USA Springs' consultants, Gradient Corporation and Aries Engineering, and former USA Springs' consultant, Geosphere Environmental. These submittals included Preliminary Reports under both the Large Groundwater Withdrawal program and the bottled water permitting process for NHDES (regulations Env-Ws 388 and 389, respectively). ENSR has also provided technical support to NHDES at several meetings with the applicant, other reviewers, and concerned citizens and local officials. ENSR conducted site visits with the NHDES and others on 1/22/02, 9/26/02, and 11/21/02; the latter site visit occurred during the pumping test for bedrock wells USA-1, USA-2, and USA-4. As NHDES explicitly stated to USA Springs, ENSR's and NHDES' attendance at meetings and site visits did not constitute a formal endorsement of any Withdrawal Testing Program (per Env-Ws 388.09), Source Evaluation Program (per Env-Ws 389.11), or Proposal for Pumping Test Program (per Env-Ws 379.11).

ENSR notes that although the NHDES provided extensive comments regarding earlier USA Springs' submittals and withdrawal test plans, USA Springs proceeded with the pumping test without having submitted a final plan that received NHDES' approval. Also, USA Springs did not



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provide pre-test water level and water quality data for monitoring wells to NHDES before the pumping test. This lack of submission and lack of final NHDES approval of the withdrawal test plan does not constitute a violation of Env-Ws 388 or 389, but represents a risk that the test procedures and related aspects of the investigation might not be adequate.

## **2.0 REVIEW FINDINGS**

### **2.1 VOC Contamination**

Several monitoring wells in the western portion of the USA Springs site produced groundwater contaminated with volatile organic compounds (VOCs), before and after the pumping test (pumping test dates: 11/19/02 to 11/29/02). The contamination may derive from Eagle Industries (a.k.a. Harnum Metals), located on the adjacent property (Tax Map 3, Lot 9; Landowner: K&B Realty Trust; 155 Old Turnpike Road, Nottingham; RCRA generator; facility ID No. NHD510132772). ENSR understands that the Eagle Industries site is subject to a separate, ongoing investigation (1/24/03 letter from the attorney for the property owner to John Regan of NHDES). ENSR received additional information regarding the study at the 155 Old Turnpike Road site on February 13, 2003, but is not including analysis of that information in this letter.

VOCs were detected in the following wells on the USA Springs' property, as documented in the Report Tables 3-11 and 3-12: USA-2, USA-4, New Barn Well, OW-1, OW-1D, OW-3, and OW-4. (For the New Barn Well and USA-2, the only VOC detections were for toluene.) ENSR notes the detection (1.7 micro-grams per liter) of 1,1 dichloroethane in USA-4 in the final pumping sample. This detection may represent the encroachment of the leading edge of a contamination plume at USA-4. 1,1 dichloroethane was found in much larger quantities in OW-1, OW-1D (a bedrock well), and OW-4 (Report Table 3-12). Various VOC detections are reported in Table 3-12. Of these, 12 detections exceed drinking water maximum contaminant levels (MCLs), per Env-Ws 317.01, and one detection was at the drinking water MCL. Four detections of 1,1 Dichloroethane exceeded Ambient Groundwater Quality Standards (AGQSS) set by the NHDES (Env-Wm 1403.05); 1,1 Dichloroethane does not have a drinking water MCL.

#### **2.1.1 Discussion Relative to Bottled Water Source Permitting, Env-Ws 389**

Regardless of the source of the VOCs, the bottled water regulation (Env-Ws 389.17) requires the establishment of a contamination control program for known sources of contamination. This applies if the contamination occurs within the Wellhead Protection Area. Env-Ws 389.17(b) requires that the contamination control program "shall include provisions and a schedule for remediation and/or monitoring of residual contamination from all known contamination sources (within the Wellhead Protection Area) which ensures that contamination shall not reach the groundwater source of bottled water." Since the contaminated wells are located within USA Springs' proposed Source Water Protection Area (Figure 3-15), Env-Ws 389.17(b) clearly applies. (The term "Source Water Protection Area" is assumed to be synonymous with "Wellhead Protection Area" for well water supplies.) Thus, remediation and/or monitoring are clearly required. While monitoring and other characterization investigations are clearly needed, monitoring alone is not sufficient to "ensure that contamination shall not reach the groundwater source of bottled water", since drinking MCLs are exceeded in monitoring wells and detection has already occurred in one of the proposed bottled water sources (pumping well USA-4).



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Env-Ws 389.17(c) indicates that compliance with a "groundwater management permit in accordance with Env-Ws 410 or successor rules shall constitute an adequate control program." (As of May 2000, Env-Wm 1403 is the successor rule that covers groundwater management permits in New Hampshire.) Env-Ws 389.17(d) requires that the Report (Large Groundwater Withdrawal Permit application) describe the contamination control program and provide "supporting evaluations and documentation." To ENSR's knowledge, a groundwater management permit with contamination control program is not in place.

The contamination control concept described on Report page 34 is very general and is not sufficiently supported for NHDES to evaluate its potential efficacy. Details of the program itself, and basic hydrogeologic characterization of the OW-1 area, needed to design an adequate program, are lacking. (Even though a (Env-Wm 1403) groundwater management permit is not strictly required as the only way to comply with Env-Ws 389.17, a comparable level of detail should be offered with any contamination control plan prepared outside the 1403 process.) With present information, it is impossible to evaluate whether the general contamination control concept proposed on page 34 of the Report would work in either overburden or bedrock. When a more detailed program is proposed, extensive testing may be required, and, given the challenges inherent to this particular scenario, significant risks are expected to remain.

Contamination also exists on the adjoining property (155 Old Turnpike Road), but insufficient information exists to map any plume(s) at this time. The Report concludes (p. 33-34) that releases occurred several years ago and that "the associated groundwater conditions are no doubt stable." Even the limited data presented in Tables 3-11 and 3-12 show major fluctuations in VOC levels, contradicting the conclusion that conditions are stable.

Clearly, the addition of pumping wells will add further instability. Pumping the USA Springs wells is shown in the Report to affect groundwater in the overburden in nearby well P-8D and in bedrock in a number of domestic wells beyond the OW-1 area (on the westward fracture trend from the pumping wells). The P-8S/D couplet is located about 300 feet southeast of OW-1, and antecedent measurements of water levels before the pumping test (Report Table 3-6) showed that water levels in P-8D are consistently higher than those in P-8S (range 0.01 feet to 0.79 feet). The Report's projections of uncorrected water level responses to 180 days of pumping (with no recharge) showed a 0.5-foot drop in P-8D and no response in P-8S. This indicates a reduction or even reversal in the vertical head gradient between shallow and deep overburden in this area. The Report concludes that response to pumping occurs preferentially along east-west fractures. Projected water level declines in domestic bedrock wells west of the 155 Old Turnpike Road site range from 22 to 61 feet after 180 days of pumping. USA Springs pumping would clearly add instability to groundwater conditions in the area.

Finally, Env-Ws 389.20(c) states that "the proposed source shall be denied ... if an inadequately controlled contamination source is present in the source water protection area." Assuming that the source of contamination is at 155 Old Turnpike Road (within the source water (Wellhead) protection area), the Report does not document any control of the contamination source, at present.



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#### **2.12 Discussion Relative to Large Groundwater Withdrawal Permitting, Env-Ws 388**

The Large Groundwater Withdrawal regulations (Env-Ws 388.18(d)(10)) state that if pumping the proposed new bottled water wells causes "the contamination of groundwater obtained from wells ... from groundwater whose flow has been altered by the withdrawal", this is considered an "adverse impact" due to pumping. If this definition of an adverse impact includes an impact on **one of USA Springs' own wells (USA-4)**, an adverse impact has already occurred (1,1 dichloroethane detection in USA-4 at end of pumping). Thus, a mitigation plan would be required, per Env-Ws 388.21. As described above, only a broad, conceptual mitigation approach is included in the Report. Additionally, Env-Ws 388.20(a)(1) indicates that conducting an impact monitoring and reporting program does not satisfy Large Groundwater Withdrawal Permit requirements if the impact is immediate or irreversible. Since an impact has already occurred at USA-4, the immediacy criterion seems to preclude obtaining compliance by conducting an impact monitoring and reporting program.

On the other hand, if 388.18(d)(10) applies only to contamination of **other water supplies**, an adverse impact due to USA Springs' pumping has not yet been demonstrated. In this case, an "impact monitoring and reporting program" is required when "work completed in accordance with these rules is not sufficient to verify that adverse impacts will not occur" (Env-Ws 388.20(a)(1)). Groundwater contamination is clearly present in both overburden and bedrock, and the evidence presented in the Report is not sufficient to determine that an adverse impact to other water supplies will not occur, due to pumping the USA Springs' wells. Thus, the program is required per Env-Ws 388.20(d), but not included in the Report.

#### **2.1.3 Conclusion**

The current lack of contaminant distribution information precludes a confident prediction that the contamination can be effectively isolated and/or remediated. The hydrogeological complexities of the site, combined with the proposed water withdrawals, make achieving effective containment or remediation very challenging.

In summary,

- Contaminated groundwater exists in both overburden and bedrock in the western portion of the USA Springs property.
- A number of detections of VOCs are above drinking water MCLs.
- A detection of 1,1-dichloroethane occurred in USA-4 near the end of the pumping test.
- The contaminated wells are located between the USA Springs pumping wells and domestic bedrock wells that experienced significant drawdowns during pumping.
- The adjoining property at 155 Old Turnpike Road is thought to be a potentially significant source of contamination, and it lies west of the pumping wells. Reported east-west fractures pass through the area of concern. These fractures may also intersect one or more of the pumping wells. These points support the likelihood of a hydraulic connection between the pumping wells and the adjoining site.
- Detailed information on the following key elements is currently lacking:
  - Spatial distribution of contamination and water levels at the adjoining property



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- Water level information at the new wells in the western part of the USA Springs site (OW-1D, OW-3, OW-4)
- Hydraulic connection (or lack thereof) between bedrock well OW-1D and the pumping wells.
- The Report presents only a very general contamination control concept that is not comparable in detail or supporting information to contamination control plans referred to in Env-Ws 389 and Env-Wm 1403 and does not meet the requirements for mitigation or monitoring plans required by Env-Ws 388.
- Investigations are apparently in progress at 155 Old Turnpike Road, with the knowledge of the NHDES Solid Waste Remediation Bureau.
- Characterization, transport prediction under ambient or pumping conditions, and remediation of contamination in fractured bedrock are known to be challenging.
- Allowing significant pumping to occur, with the present level of knowledge, presents significant risks that contaminants will spread, possibly to a sensitive receptor, and may increase the technical complexity and expense of remediation.
- USA Springs appears not to have notified NHDES within 60 days of discovering the groundwater contamination on its property. (Lab reports dated 11/27/02; report to NHDES dated 2/3/03).
- A contamination source appears to be present within the Source Water (Wellhead) Protection Area. If this source is uncontrolled, Env-Ws 389.20(c)(1) stipulates that the new wells be denied a bottled water source permit.

## **2.2 Potential Impacts on Homeowner Wells**

ENSR recognizes that USA Springs has conducted an extensive pumping test designed to accomplish a number of objectives. However, USA Springs proceeded without a pre-approved pumping test plan. Also, a number of items regarding the test itself and regarding test analysis, may, in combination, raise questions regarding the interpretations that USA Springs has made using the pumping test data. These items are discussed as a separate section of this letter, "Withdrawal Testing" (Section 2.4). For the present discussion, however, ENSR takes the 180-day projected drawdowns for homeowner wells at face value, as presented in the Report.

Projected 180-day drawdown results show (Report Table 4-1) that four of the domestic wells monitored would experience a drawdown greater than or equal to 10% of the available water column in the well. All of these wells (Brett and Stephanie Gillespie, Irene Gillespie, James Page, Jr. and John Pierce) are located along Rt. 4 (Old Turnpike Road), west of the USA Springs site (Figure 3-13). The Brett and Stephanie Gillespie well has a projected drawdown of 61 feet, and the Page well shows a projected drawdown of 39 feet and is more than 3000 feet away from the nearest USA Springs pumping well. Additional wells in this vicinity have projected drawdowns that are greater than 5% of the water column. Other wells in the area were not monitored during the test, and some of these may also experience significant drawdowns during USA Springs' pumping.

Of the four wells with greater than 10% projected drawdown, none has a Well Completion Report in Appendix C, and Appendix C contains a questionnaire only for the Pierce well. This



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Questionnaire indicates that a new pump motor was installed in March 2002, but does not provide pump depth or other information. The Report asserts (p. 35) that "anticipated depth of pump intakes (is) expected to be ... at sixty to seventy-five percent of the well depth", but provides no evidence. The Report predicts "no loss of available water to the users of these wells." This assertion has not been justified.

Also, several wells at homes on Lincoln Drive, east of the site show projected drawdowns of 10 feet or more and/or drawdowns consisting of greater than 5% of the available water column (Table 4-1 and Figure 3-13). Lincoln Drive wells that were not monitored may also experience significant drawdowns.

Env-Ws 388.18(c)(1) defines an "adverse impact" to a private water supply well in terms of capacity (yield), not water level or drawdown. The Report provides no assessment of possible capacity reduction (or lack thereof), except the statement (p. 35) that "No adverse impacts ... on well yield were reported at any location". This lack of reporting is not a substitute for direct measurement or indirect assessment, necessary to follow the letter of the regulation. ENSR recognizes that water levels are much more amenable to direct measurement than capacity (yield) in a private, domestic well. However, capacity decrease could be estimated if the pump make and model were identified, the pump curve were obtained from the pump installer or manufacturer, and the reduction in yield of the pump were estimated from the pump curve, based on increased drawdown. Considering the precipitation that occurred before and during the pumping test, ENSR recommends that every effort be made to identify the pump model and obtain the pump curves for the four wells that may experience 10% or greater drawdown. If this is not possible, it is difficult to justify a conclusion that there will be no adverse impact on private wells.

Additionally, groundwater levels at the 155 Old Turnpike Road site (probable source of VOC contamination) are unknown. With a 61 foot projected drawdown at the Gillespie well, a few hundred feet to the west of the 155 Old Turnpike Road site, contaminant transport to this well, under USA Springs pumping conditions, cannot be ruled out.

USA Springs proposes to monitor three of the four wells that are projected to experience 10% or greater drawdown after 180 days of pumping with no recharge. If necessary, USA Springs would implement minor mitigation measures such as lowering the pump intake for these or other wells. Based on the above discussion, ENSR believes that this proposed monitoring and mitigation program is inadequate, per Env-Ws 388.21. A stronger monitoring program is needed per Env-Ws 388.20(a). Monitoring should include the four wells with 10% drawdown impact, other wells in the immediate vicinity of these four wells, and one or more Lincoln Drive wells. Monitoring should continue as long as the withdrawal continues, with an option to reduce the monitoring if data warrant, not vice versa as proposed on page 42. For the first year of operation, reporting to the NHDES should occur more frequently than proposed on page 42. Unless the further analysis (involving pump curves) described above indicates otherwise, an "immediate" mitigation program may be required, per Env-Ws 388.21. It may be necessary to undertake mitigation steps for the four wells that show 10% impact, as an immediate permit condition, before pumping begins.

### **2.3 Wetlands Impacts Assessment**

As stated above, ENSR recognizes that USA Springs has conducted an extensive pumping test designed to accomplish a number of objectives, including wetlands impacts assessment.



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However, USA Springs proceeded without a pre-approved pumping test plan, and only Barrington Prime Wetlands #40 (BPW40) was assessed in any detail. Also, a number of items regarding the test itself and regarding test analysis (discussed as Section 2.4 of this letter, "Withdrawal Testing"); may, in combination, raise questions regarding the interpretations that USA Springs has made using the pumping test data. Of particular concern for the wetlands impacts assessment is the relatively high flows due to significant precipitation before and during the test.

The relatively high flows and surface water levels during the test constitute one of several factors that call the wetlands leakage analysis (p. 38 – 40 and Table 4-2) into question. The Report's analysis concludes that "potential loss in groundwater discharge to the on-Site Beaver Pond (BPW40) is insignificant compared to the storage in the Pond and the flow rate observed in the Unnamed Creek during the test" (p. 38). The Report's wetlands leakage analysis estimates the amount of upward flow from shallow overburden to the wetland under non-pumping conditions, and it also estimates the amount of downward flow from the wetlands to shallow overburden after 180 days of pumping with no recharge. The Report's analysis then combines these two results to obtain the "total difference in leakage" (Table 4-2) of 0.16 cu. ft./min.

Assessing wetlands impacts was identified very early as a key concern for this particular Large Groundwater Withdrawal Permit application. However, the Report presents almost no data characterizing the geologic deposits beneath BPW40. The drilling and boring logs in Appendix E contain geologic information for only one point (DP-1) in BPW 40, and this log indicates only that 4 feet of muck (loose, wet, brown, suspended fine organic material with sticks) is underlain by 3.5 feet of "wetland deposits" that were not sampled or described. With this nearly non-existent geologic characterization, one cannot predict accurately the magnitude of leakage that would occur in response to head differences between the wetlands and the shallow overburden.

During low flow in the Unnamed Creek, the percentage of groundwater loss relative to Creek flow would be much higher than that presented on page 38. Also, as described in another section (2.4.4) of this letter, the weirs were improperly constructed and monitored, thereby casting doubt on the stream flow results. (With the high flows that existed during the test, however, flow reductions due to pumping may not have been expected to be measurable regardless of weir construction and measurement.)

Additional observations affecting the wetlands leakage analysis include:

- Geologic characterization of the deposits beneath BPW40 is almost completely lacking, as described above. A thickness of pond or wetland bottom sediments of 3 feet was used in Table 4-2, based on DP-1S. Even if one accepts the very limited description in the log for DP-1S as generally applicable to BPW40, the log indicates that 3.5 feet of wetland bed deposits underlie 4 feet of muck.
- The vertical hydraulic conductivity value used in the calculations is taken from a single triaxial permeability test on a sample collected from OW-1D, located outside of wetlands and more than 1000 feet away from BPW40. (This sample is described in the OW-1D well log as "medium dense, light brown, fine to medium sand and silt, trace gravel, moist" (Appendix E). The Report acknowledges (p. 39) the discrepancy, but states that the vertical permeability result "is conservative because the fine-grained, organic-rich wetland/pond



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deposits are expected to have a lower vertical conductivity". This may be true, but is not sufficiently justified by the available information.

- The Report's conclusion that the leakage rate will be reduced by 0.16 cu. ft./min is deceptive. If the calculations are correct, there is not just a reduction in upward leakage; there is actually an elimination of the upward vertical gradient that might drive groundwater discharge to the wetland under non-pumping conditions. Thus, even under the relatively high flow conditions under which the pumping test was conducted, pumping the USA Springs wells may cause groundwater discharge to the wetlands to cease.
- Item #4 on Report page 39 states that use of a pre-test water level measurement from SG-1 is probably conservative, because actual measurements during a 180-day, no recharge scenario would be lower, "hence resulting in a smaller gradient and a smaller recharge rate." This is incorrect and contrary to the effect on the calculation result that should be expected due to using a lower starting pond water level. With the same head in groundwater in the shallow overburden, lower surface water level would result in a greater, not a smaller, vertical upward gradient. In this case, possibly more drawdown of shallow groundwater would occur before groundwater and surface water in the wetlands reached equilibrium. (See below.)
- The Report (p. 40) concludes, "both the large flow volume in the Unnamed Creek and the large storage of the Pond are expected to minimize any potential effect of the proposed withdrawal on the wetland system and Pond." The conclusion that Pond storage will help minimize pumping effects implies that USA Springs believes that infiltration of water from the Pond may occur during pumping. The Report does not discuss the effect that pumping the wells during a time of reduced (or even zero) flows in the Unnamed Creek would have on the amount of water in the Pond. If stream flow were reduced or eliminated, and if groundwater discharge to the wetland ceased, the Pond would lose storage due to evaporation, surface water outflow, and possible infiltration into the ground under pumping stress. These potential wetland effects are not assessed in the Report.

Selected surface water information is illustrated in the "Surface Water Elevations" graph in Appendix H. This graph shows that prior to the pumping test, groundwater levels in shallow overburden (DP-1 interior) are greater than surface water levels in BPW40 (DP-1 outside and SG-1). This illustrates the upward head gradient that existed prior to pumping. After one day of pumping (11/20/02), groundwater and surface water levels were nearly coincident throughout the remainder of the test. Thus, the upward gradient was eliminated, and an equilibrium condition was apparently established. One possible interpretation of these data is that under pumping conditions, water is drawn toward the pumping wells from the shallow overburden in the vicinity of BPW40; once the upward gradient is eliminated, induced infiltration from the wetland may occur. The wetland may be acting as a hydrogeologic recharge boundary during pumping conditions. The Report should assess this possibility and the consequences for the wetland during dry conditions.

The information presented in the Report supports USA Springs' observation (p. 40) that there was no response noted in overburden deposits near Nottingham Critical Wetlands (CI)/Barrington Prime Wetlands #39 and Barrington Prime Wetlands #10. The Report does not discuss whether



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this would be true under drought conditions. Also, the Report extends the observations for these two wetlands to make the conclusion that "there will be no adverse impacts to any far-field wetlands located within the Study Area." This conclusion may not be true under dry conditions and/or for wetlands that may overlie certain bedrock fracture zones (and thus experience preferential drawdowns). Also, PS-2S, located near a small wetland near pumping well USA-2, showed a slight response (rise in water level) at the time of pumping shutdown (graph in Appendix H).

ENSR recognizes the logistical difficulty and expense of postponing a pumping test of this magnitude. However, running the test following and during significant precipitation places an extra burden on the data analysis, in order to characterize the impact of pumping on a wetland (or defend the claim of no adverse impact) (Env-Ws 388.16(e)). Because of the conditions under which the pumping test was conducted and the apparent lack of data correction for these conditions, a more stringent monitoring and mitigation plan than might otherwise be required is appropriate in this case.

The Report proposes a long-term wetlands monitoring program. ENSR recommends that the groundwater/surface water-monitoring program (p. 42-43) add DP-1S (inside and outside) to the list of monitoring points, since observations at this point were key to the wetlands leakage analysis. ENSR recognizes that conditions may not always allow access to DP-1S, but the ability to assess vertical head gradients between shallow groundwater and surface water will be very important.

The water level monitoring proposed on page 43 appears to occur only during the growing season. However, dry conditions differing from those that prevailed during the pumping test, may occur at any time of the year. USA Springs' proposed program has no provision for monitoring to increase in frequency if precipitation drops below a certain level and/or if upward flow gradients (from shallow groundwater to surface water) are eliminated. The Report proposes annual monitoring reports to the NHDES; reporting should occur immediately (within 5 days, per Env-Ws 388.19)) if an adverse impact (per Env-Ws 388.18(7)) is detected in BPW40. The Report does not propose a threshold criterion for mitigating action (e.g. pumping rate reduction), should this become necessary.

## **2.4 Withdrawal Testing**

ENSR enumerates a series of items regarding the withdrawal (pumping) test on USA-1, 2, and 4. Although taken alone, many of these items might be minor; the items taken in combination may be more serious.

### **2.4.1 Precipitation Before and During Pumping Test**

Reportedly, 1.79 inches of precipitation fell in the three days immediately prior to the test. Although some of the precipitation fell as snow and was not immediately available as recharge, melting during the test probably allowed significant infiltration of water into the ground. (Temperature data are not supplied with the Report.) Also, 0.55 inches of precipitation fell during the 10-day test. (Drawdown graphs in Appendix H show water level increases in a number of on-site wells between 5000 and 6000 minutes after pumping began. Also, off-site wells that were not impacted by pumping generally showed a rise in water levels before and during the pumping test.) Precipitation data were obtained from a weather station in Durham, New Hampshire,



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approximately 7.5 miles away, according to the Report, page 13; precipitation should have been measured on site.

Env-Ws 379.15 requires that "the pumping test shall be postponed or prolonged if high recharge conditions prohibit the ability to use test data to meet the intent of this rule. This determination shall be made based on site-specific conditions at the time of testing. Where postponing or prolonging the test is not reasonably feasible, ...data (shall be) adjusted using conservative assumptions...". (Env-Ws-379 governs pumping tests, by reference in both Env-Ws 388 and 389.) Although the pumping test extended beyond the duration required by the regulations, the precipitation and high flow conditions render conclusive analysis regarding impacts on homeowner wells and wetlands difficult, especially without data correction.

Proceeding with the test during the November 19 – 29, 2002 time frame increased the importance of data corrections for influences other than pumping. Env-Ws 379.11(e)(3)b.3 requires water level measurements in a background well outside the zone of influence. This was done, but not documented or used to correct for precipitation effects. Clear and well-documented corrections for precipitation would lend increased confidence to the Report's conclusions regarding impacts on homeowner wells and wetlands. As it is, the claim that the Report's 180-day with no recharge projections constitute a "worst case analysis" is difficult to justify because pumping test results during a time of active recharge are used in the projections. Thus, the projections implicitly assume a continuing level of recharge, not 180 days with no recharge.

The Report makes the argument that water pumped from USA-1, -2, and -4 is derived from short-term "recharge" and not from "storage". Therefore, precipitation before and during the pumping test would be expected to produce significantly different results than if the test were conducted during a time of no recharge.

Precipitation may have masked pumping-induced drawdown that might otherwise have been observed in the New Barn Well (NBW). The Report (page 28) predicted no response at the NBW, even though Geosphere's step tests showed that in only a few hours of pumping there was a response. The Report's results for the NBW show no response due to pumping, as depicted on the arithmetic-scale graph of transducer data (Appendix H), but the vertical scale is not suitable and may have hidden a response. The semi-log plots for both manual and transducer data show apparent responses to both precipitation and pumping shutdown in NBW.

In summary, because the test was conducted during a time when active recharge was likely occurring, and because precipitation corrections were apparently not made during data analysis, it is difficult to determine whether domestic wells and BPW#40 would experience adverse impacts and whether proposed monitoring and/or mitigations plans are appropriate and adequate.

Even if re-analysis of the data using a precipitation correction indicates that there are no immediate and irreversible impacts (per Env-Ws 388.20) due to pumping, detailed monitoring and mitigation plans may still be required. Unless data analysis can indicate convincingly that adverse impacts will not likely occur, detailed mitigation action plans should be offered regarding both domestic wells and BPW#40. Such plans should propose both triggering thresholds for domestic wells and wetland observations, and also specific responses in each case. In its present form, the



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Report is probably overly optimistic in its assessment of potential impacts, and lacking sufficient monitoring and mitigation plans.

#### *2.4.2 Discharge Measurement*

Env-Ws 379.11(e)(2)c (referenced by both Env-Ws 388 and 389) stipulates that "the discharge rate from the test well shall be measured using a circular orifice weir or other device which provides measurements of equal precision." The present test used flow meters instead of orifice weirs, and the calibration certification for the meters had expired (Appendix H.9). When flow meters are used, it is common practice to allow for bucket-stopwatch calibrations at some point in the discharge line and/or to use orifice weirs to verify the accuracy of the flow meters. This was not done. Therefore, the discharge measurements are in non-compliance with the regulatory requirements for this critical parameter.

Assuming that quantity of water pumped is tied to the degree of impact on domestic wells, wetlands, and contamination migration, greater confidence in the precision of the discharge measurements would be beneficial. For example, if a series of pumping rate reductions were stipulated as part of a response plan to adverse impacts, the reductions could be selected with more confidence if there were greater confidence in the accuracy of the flow measurements made during the test.

Env-Ws 379.11(e)(2)e requires that the "test well shall be pumped at a single, constant rate", but does not specify a tolerance limit. ENSR acknowledges that under field conditions with bedrock wells, some fluctuation is inevitable and that equipment breakdowns can occur. After installing the new meter on USA-1 on 11/22/02, no interruptions were recorded, and all three wells had constant "target rates" for the rest of the test. However, significant (>10%) fluctuations relative to the target rates are noted in Appendix H.1. Presentation of average pumping rates (and deviations) for each well for the last 7 days of the test would be instructive, as would a discussion of the effects (or lack) of the discharge deviations on the key interpretations for the analysis.

#### *2.4.3 Data Presentation and Analysis*

Env-Ws 379.11(e)(8) requires that water level data be presented in tabular form. The table(s) must include appropriate corrections to the groundwater levels. In addition to data corrections for precipitation effects, because many of the wells monitored during the USA Springs test are constructed in semi-confined aquifers, correction for barometric efficiency is also appropriate. Further, depending upon the types of transducers used, barometric pressure variation effects on water level instrument reading may also be necessary if the pressure transducers were not vented.

Both recorded and corrected water levels are to be plotted versus time, as spelled out in detail in Env-Ws 379.11(e)(8)c. For the large volume of data collected, it may not be reasonable to show all of the graphs, both corrected and uncorrected; nor is it appropriate to show log-log plots for bedrock wells. On the other hand, it is not acceptable to completely omit corrections due to precipitation. The effect of the precipitation corrections on domestic wells and wetlands should be discussed, as described above.

Env-Ws 379.11(8) requires a table providing the horizontal distances between observation points and the pumping well(s). This has not been provided. The same regulation requires that



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drawdown be plotted versus the log of distance. This has not been included in the Report and should be added for selected well profiles, especially west of the pumping wells. The plots should use measurements corrected for precipitation and other effects described above. Both end-of-pumping test results and 180-day results should be considered. As a result of this analysis, it is likely that the Wellhead Protection Area should be expanded to the west. (ENSR notes that outcrop #4 (Figure 3-1), located along Route 4 west of the site has approximately east-west fracturing.

All data presentations, figures, and discussion are based on 180-day projections of the pumping test results. The Report should provide a summary table of water levels at the end of the end of the pumping period. End-of-test figures analogous to Figures 3-13, 3-14, 3-16 and 3-18 should also be provided.

#### **2.4.4 USA Springs V-Notch Weir Installations**

On 11/21/02, ENSR and NHDES examined two weirs (Weir-1 and Weir-2 on the Unnamed Stream) near the USA Springs site. Their construction and apparent methods for measurement were sub-standard, likely producing erroneous stream discharge estimates.

Discharge estimates produced from measurements employing a V-Notch weir are subject to a range of errors largely influenced by the construction and placement of the weir in the stream channel and the method and location of stream-stage measurements. Some critical elements of weir design and installation include:

- Stage needs to be measured in the pool upstream of the weir at a distance of 3 to 4 times the maximum head (3 to 4H) anticipated in the crest.
- The upstream edge of the weir should be smooth, extending a minimum distance of 2H from the maximum anticipated head to the channel banks and 2H from the bottom of the crest to the bottom of the pool.
- The crest of the V should be a minimum of 0.2 feet above the maximum downstream water surface level.

In the case of the two weirs examined at USA Springs, numerous problems were observed, including:

- The staff gage (yard stick) used to measure stage behind the weir was located in the nape (the sloping area of the water surface, where it converges to flow through the V), adjacent to the notch.
- The downstream sides of the notch were submerged, preventing a free-flow condition.
- Numerous obstructions were present immediately upstream of the weirs including branches, tree roots, and, probably most importantly, the sand bags used in the construction.
- The weirs were leaking.

With the high flow conditions that prevailed during the pumping test, observable impacts to stream flow due to pumping may not have been expected. However, under low flow conditions, stream flow impacts may occur. If the weirs are to be part of the ongoing monitoring infrastructure, their construction and staff gage placement should be improved, as described in Water Measurement Manual, Third Edition (U.S. Department of the Interior, Bureau of Reclamation, 1997).



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## **2.5 Well Construction**

Env-Ws 389.18 requires that wells to be used as bottled water sources comply with We 600, "Standards for the Construction, Maintenance and Abandonment of Wells." This rule (We 602.02(f)(6) requires that "The void outside the casing shall be filled with cement grout, bentonite or ledge drillings or cuttings." Drive shoes are also required when steel casing is used. The well logs in Appendix E for USA-1; -2, and -4 do not contain this information. If the void spaces were not filled as required and drive shoes were not used, the wells do not meet the regulatory requirements for approval as bottled water sources. If the void spaces were filled as required and drive shoes were used, proper Well Completion Reports or well logs that show this need to be submitted.

## **2.6 Conceptual Hydrogeologic Model and Other Items**

Env-Ws 388 and Env-Ws 389 both require the development, refinement, and presentation of a conceptual hydrogeologic model. However, the regulations do not provide for either approving or denying a permit based on the content of the model. Models are based both on observations and on interpretations, and professional hydrogeologists could reasonably disagree on certain aspects of a conceptual model for a particular groundwater withdrawal at a particular site. In other words, disagreement over the model is probably not grounds for denying a permit. However, the conceptual model is fundamental to the development of an adequate withdrawal test and the interpretation of resultant data. It is therefore critical to an accurate forecast of impacts due to pumping. There are, in particular, certain aspects of the conceptual hydrogeologic model that are subject to question.

### **2.6.1 The Source of Pumped Water**

The Report repeatedly states that the water pumped from the wells is derived from "recharge" and not "storage". If one accepts the Report's calculations, it may be true that the net amount of water pumped is less than that recharged in the Study Area. However, this does not mean that the water necessarily derives from one source or the other. A pumped groundwater system is dynamic, and the proportions of water flowing to a well from prevailing recharge mechanisms is likely to vary with time.

### **2.6.2 Effect of Precipitation During the Test**

The statement on page 17 that the "precipitation received during the test ... was small and did not have any appreciable effect on the data" appears to contradict both the data presented and the claim that the pumped water is derived from recharge (not storage). Several wells (NBW, OW-1, PS-2S, PS-3S) showed water level rises probably due to precipitation. (Although it has been suggested that these water level rises may be due to leakage from the discharge pipes, OW-1 is not near a discharge line.) The Report's statement (p. 17) regarding recharge during the test appears to contradict the claim that water pumped from the wells derives entirely from recent recharge. The statement on page 31 that "the effect of recharge events are manifested within the bedrock aquifer within days", appears to contradict the claim that precipitation received during the test had no appreciable effect. The data presented on the top of page 31 indicate that piezometric head increases in bedrock fractures are an order of magnitude greater than the amount of precipitation received.

The degree to which the bedrock may be isolated from short-term recharge is critical to all aspects of the required analysis. In two places (pages 32 and 34), the report asserts that



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bedrock is insulated or vertically isolated from events that occur on the surface (barn fire or VOC contamination). Again, this conceptual analysis appears to contradict the notion that recharge to the bedrock is so rapid as to prevent the wells from tapping storage. Furthermore, whether a particular bedrock fracture is isolated from the surface or shallow overburden at any particular location depends on the nature of the overburden and the attitude, morphology, extent, and connectivity of the fracture.

#### *2.6.3 Bedrock Portion of Conceptual Model*

Pumping wells in a fractured-bedrock aquifer derive water directly from water flowing through the bedrock fractures, which are typically recharged from water that is stored within overlying sediments and in some cases from related surface waters. Water stored in the overlying sediments and surface waters is replenished by precipitation. As such, the geometry and orientation of primary fractures in communication with (connected to) the wells is a key controlling factor in how, when, and where pumping impacts are experienced by other bedrock wells and environments overlying the bedrock aquifer. A thorough conceptual and quantitative treatment of the location and hydraulic attributes of the fractures is, therefore, essential to an accurate prediction of impacts.

ENSR finds two significant shortcomings with the bedrock portion of the conceptual model, as presented in the Report. First, the model is not fully presented or illustrated. The reader is referred to previous reports for detailed discussions of geophysical surveys, fracture trace analysis, and field measurement of bedrock fractures. Results from these three studies should be integrated, and a detailed conceptual model should be presented as a stand-alone in the Final Report (and/or key sections of previous reports should be appended.) Second, some of the technical discussion regarding bedrock structures is unclear. The Report (p. 24) refers to "minor faults ... consistent with the secondary bedrock strike orientation", but does not specify which "secondary bedrock strike orientation" they follow. Also, the report does not describe or show on a map where these minor faults are located. These minor faults may be important because they may significantly influence groundwater flow in some portions of the Study Area. A three-dimensional block diagram of the study area would serve to illustrate the key features of the conceptual hydrogeologic model, especially the fractured bedrock portion of the model.

#### *2.6.4 Water Quality*

Preliminary (post-drilling; discharge permit) water quality results should be included in the conceptual hydrogeologic model discussion, per Env-Ws 388.06(c)(1). Also, the last two lab reports in Appendix G (samples 75790 and 75791) both are labeled as collected from well OW-1, but show very different results.

### **3.0 SUMMARY of CONCLUSIONS**

1. **VOC contamination** of groundwater exists within the proposed Source (Wellhead) Protection Area, in monitoring wells in the northwestern portion of the property; in wells in the property that abuts to the northwest; and in USA-4, after ten days of pumping. Since the contamination is currently not controlled, Env-Ws 389 requires that permits to use the wells as bottled water sources be denied. More complete characterization of the nature and extent of the VOC contamination and of overburden and bedrock geology is needed in order



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to propose an "impact monitoring and reporting program", required before a large groundwater withdrawal permit can be granted under Env-Ws 388.

2. **Withdrawal test data** (see item 5) collected during a time of active recharge are used, without correction, in the Report's forecasts of impacts. Used in such a manner, the forecasts **implicitly assume a continuing level of recharge**, not 180 days with no recharge.
3. Reported effects of pumping, projected to 180 days, but with no precipitation correction, indicate that four **homeowner wells** located west of the site may experience drawdowns equal to or greater than 10% of their water column. This may be true of additional wells not monitored. Significant drawdowns were also noted for some Lincoln Drive wells. Assessments of the effects on well yield (required by Env-Ws 388) were not included in the Report. If these assessments cannot be made using pump curves, a much more aggressive mitigation and monitoring program should be proposed.
4. During pumping, groundwater levels beneath the western portion of **Barrington Prime Wetland #40** showed a significant decline. An ambient, upward gradient from shallow overburden to surface water existed prior to the test and was eliminated during pumping. The pumping test occurred during relatively high flow conditions, and low flow analysis is lacking. The leakage analysis is flawed and not based on conservative assumptions. Therefore, the conclusion of no adverse impact on wetlands is poorly founded. If a permit is granted, extensive monitoring requirements and detailed mitigation plans should be required.
5. Significant amounts of **precipitation** and associated recharge occurred before and during the test. To lend confidence that the 180-day analyses are truly conservative, data corrections must be made. USA Springs may be able to address other items regarding the pumping test with a supplemental submittal.
6. Well yield fluctuated significantly during the last seven days of the test, and **discharge measurements** did not meet regulatory requirements for accuracy.
7. **Proper well construction** (grout and drive shoes) is not documented for the three proposed bottled water sources, as required by We-600 and Env-Ws 389.
8. Additional items noted by ENSR are provided for the NHDES' information and may not necessarily directly impact the decision to approve or deny a permit. The NHDES may or may not choose to communicate these items to the applicant, but should be aware of the items because of the intense scrutiny that is likely to be forthcoming. For example, the conceptual model is not fully developed and integrated, especially regarding bedrock. Internal inconsistencies, unclear explanations of minor faulting, and lack of illustration cast doubt on the Report's forecasts. A detailed and well-founded conceptual model is necessary in order to address the VOC contamination and other issues in an appropriate manner.

We hope that you find this review helpful, and we would be pleased to discuss any of these items with you or provide additional opinions as needed. We look forward to continuing to work with the NHDES on this project.

Very truly yours,

ENSR INTERNATIONAL

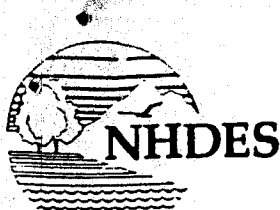


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James H. Vernon, Ph.D.  
Senior Hydrogeologist/Project Manager

John J. Donohue, IV  
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NH Licensed Professional Geologist No. 548

JHV/jkd



State of New Hampshire  
DEPARTMENT OF ENVIRONMENTAL SERVICES

6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095  
(603) 271-3503 FAX (603) 271-5171

For: Jim Nadley

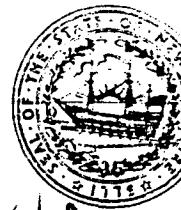


Exhibit D

August 12, 2003

Francesco Rotondo  
USA Springs, Inc.  
9 Regis Drive  
Pelham, New Hampshire 03078

**Subject: USA Springs – Final Application Report Dated February 4, 2003**

Dear Mr. Rotondo:

The purpose of this letter is to inform you that your application for: 1) Major Groundwater Withdrawal Permit; and 2) New Source of Bottled Water has been denied in accordance with Env-Ws 388.23 and Env-Ws 389.20.

On February 4, 2003, USA Springs, Inc. (USA Springs) submitted an application report titled "Large Groundwater Withdrawal Report – Proposed USA Springs Bottling Plant" to the Department of Environmental Services (DES) in order to fulfill the requirements of New Hampshire Administrative Rules Env-Ws 388-Major Large Groundwater Withdrawal and Env-Ws 389-Groundwater Sources of Bottled Water to obtain approval to withdrawal up to 310,000 gallons of groundwater a day for the purpose of bottling water.

In a letter dated March 20, 2003, DES established the review period for the application which extended through August 12, 2003 so that supplemental information obtained from an investigation at an adjacent property pertaining to contamination may be incorporated into the application submitted by USA Springs.

In a letter dated April 11, 2003, DES provided USA Springs with preliminary technical findings on the application relative to the requirements of Env-Ws 388 and 389. In the cover letter accompanying the technical comments, DES noted that no findings pertaining to issues related to groundwater contamination and the ongoing investigation at the adjacent K&B site were provided with the preliminary findings because it anticipated that additional information regarding this matter would be forthcoming.

USA Springs has not provided supplemental information to address issues of contamination at the adjacent site, or to respond to DES's preliminary technical findings before the August 12, 2003 review period deadline. Accordingly, DES has attached decisions and findings regarding all aspects of the application, which includes only the material dated February 4, 2003. Each of the decisions and findings included with this document provide a separate and independent basis for denial of the application for a Major Groundwater Withdrawal Permit in accordance with Env-Ws 388.23 and/or a basis to deny a new source of bottled water in accordance with Env-Ws 389.20.

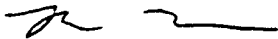
USA Springs may initiate a process whereby DES will provide a formal review of any supplemental information USA Springs deems necessary to satisfy the requirements of Env-Ws 388 and 389. This process may be initiated by petitioning for a rehearing in accordance with RSA 485-C:21, VI, which stipulates that any person directly affected by DES's decision may appeal and request a rehearing to DES in accordance with RSA 541. Such an appeal must be made to the DES within 30 days and must be addressed to the Administrator of the Water Supply Engineering Bureau, 6 Hazen Drive, PO Box 95,

Concord, NH 03302-0095. An anticipated timeline and activities associated with a rehearing process, if requested by USA Springs, are described below:


- 1) A request for a rehearing is submitted by USA Springs within thirty (30) days of receipt of the denial;
- 2) DES will act upon the motion within ten (10) days of receipt; and
- 3) If DES grants the motion for a rehearing, DES will allow USA Springs ten (10) days to submit any additional information it deems is necessary for DES to review. DES will establish a thirty day (30) public input period during which a public input meeting would be scheduled. USA Springs would then have ten (10) days to provide any response it deems appropriate to public comment received. DES will close the administrative record and issue a decision two weeks after the close of the administrative record.

Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,



Brandon Kernen, P.G.  
Hydrologist  
Water Supply Engineering Bureau



Anthony P. Grunta, P.G.  
Administrator  
Water Supply Engineering Bureau

Enclosure

cc: M. Sharma, Gradient Corporation  
G. Smith, Esquire  
R. Head, NHDOJ  
S. Pillsbury, DES  
H. Stewart, DES  
M. Nolin, DES  
C. Reilly, Town of Barrington  
C. Brown, Town of Nottingham  
S. Fournier, Town of Northwood  
C. Copeland, Strafford Regional Planning Commission

**Decisions and Findings**  
**New Hampshire Department of Environmental Services - August 12, 2003**  
**USA Springs Final Application Report Dated February 4, 2003**

**REGULATORY BACKGROUND**

The proposed withdrawal of 310,000 gallons per day by USA Springs for the purpose of producing bottled water is subject to two regulations. The first regulation is Env-Ws 389-Groundwater Sources of Bottled Water. These rules establish procedures and standards for the selection of new groundwater sources and contain criteria for approving new sources of bottled water relative to source water protection (wellhead protection), water quality, and impacts to other water resources that must be adhered to when approving new sources for bottled water in accordance with RSA 485:3 XI. Env-Ws 389.20 contains criteria for determining if a proposed source of water must be approved or denied. Specifically this rule states the following:

*Env-Ws 389.20 Criteria for Approval or Denial of New Sources.*

- (a) Notwithstanding Env-Ws 389.20 (b) and (c) below, upon determining that the report required in accordance with Env-Ws 389.19 contains all the required information, that it is correct and complete, and that all specified requirements of Env-Ws 389 and We 600 have been met, the department shall approve the source and notify the applicant and the department of health and human services that the source has been approved.*
- (b) If the report is deficient in any of the criteria in Env-Ws 389.19, the applicant shall be notified in writing.*
- (c) The proposed source shall be denied under the following conditions:*
  - (1) If an inadequately controlled contamination source is present in the source water protection area; or*
  - (2) If the applicant has failed to perform any activity or to meet any of the requirements contained in these rules.*
- (d) For withdrawals with a permitted production volume of 57,600 gallons or greater, approval by the department shall be contingent on compliance with notification and impact assessment and mitigation requirements pursuant to RSA 485-C:4, XII and Env-Ws 388.*

The second regulation that must be complied with for developing a source of bottled water is Env-Ws 388-Major Groundwater Withdrawal. This rule implements the requirements of RSA 485:3 and RSA 485-C by: 1) Establishing procedures and criteria for ensuring water conservation and identifying the need for a major withdrawal; 2) Establishing procedures and criteria for identifying and addressing impacts which occur as a result of a permitted major withdrawal; and 3) Establishing procedures and standards for the denial of or reduction in a major withdrawal. Env-Ws 388.23 contains criteria for

determining if a proposed groundwater withdrawal must be approved or denied. Specifically this rule states the following:

*Env-Ws 388.23-Procedure and Criteria to Issue, Deny, or Suspend a Major Withdrawal Permit*

- (b) *The department shall issue or renew a major withdrawal permit described pursuant to Env-Ws 388.23 under the following circumstances:*
- (1) *When information in the report produced in accordance with Env-Ws 388.12 is complete and correct; and*
  - (2). *When the information in the report produced in accordance with Env-Ws 388.17 demonstrates the withdrawal will:*
    - a. *Not produce adverse impacts; or*
    - b. *Result in impacts that can and will be mitigated, provided:*
      1. *There is sufficient information to verify that any adverse impacts that occur as a result of the withdrawal will not be:*
        - (i) *An adverse impact that may occur immediately; and*
        - (ii) *An irreversible impact; and*
      2. *A monitoring and reporting program is implemented in accordance with Env-Ws 388.20.*
- (c) *The department shall not issue a new, or renew an existing major withdrawal permit if it is demonstrated that a withdrawal will result in adverse impacts which cannot or will not be mitigated.*

DES finds that it cannot approve the application report for new sources of bottled water because: 1) The application does not contain all of the information required by Env-Ws 389.19, and therefore must be denied in accordance with Env-Ws 389.20(c)(2); 2) The application indicates that an uncontrolled source of contamination exists in the source water protection area (which has the same meaning as "wellhead protection area") and therefore must be denied in accordance with Env-Ws 389.20(c)(1); 3) The application submitted does not contain all of the information required by Env-Ws 388.17 and consequently is not complete and correct. Therefore it does not meet the requirements of Env-Ws 388.23(b)(1); 4) The application does not contain sufficient information that demonstrates that the withdrawal will not produce adverse impacts or that these impacts will be mitigated and therefore does not meet the requirements of Env-Ws 388.23(b)(2).

Each specific component of the application or proposed project that is not consistent with the requirements of Env-Ws 388 and/or Env-Ws 389, and thus represents a separate and independent basis for denial, is listed below.

## SUMMARY OF FINDINGS AND DECISIONS

- 1) *Conceptual Model - 180-day Recharge Period*: Executive Summary, page i (paragraph 1) states: "in particular, this rate can be sustained even if there were no contribution to groundwater from precipitation at all for six months, an event which almost never occurs in New Hampshire". In New Hampshire, water levels in all types of aquifers typically decline every year from the month of May through the month of October, because very little precipitation replenishes aquifers during this period (see data collected by the United States Geological Survey at <http://nh.water.usgs.gov/Publications/annual01/A8.gwlevels.pdf>). The rate of decline varies, being greater during periods of drought and less during wet weather periods. The application indicates 1) The no recharge condition of 180 days is overly conservative; and 2) The results of the withdrawal test reflect this condition. Neither of these assertions is correct. The no recharge condition closely represents yearly seasonal low recharge conditions and the data obtained from the withdrawal testing program and associated analyses have not been calibrated to reflect this condition as repeatedly stated in the application. Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is: 1) Not complete or correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20(a); and 2) Not assessed accurately to demonstrate that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).
- 2) *Aquifer Storage/Source of Pumped Water*: Executive Summary, page ii (paragraph 3), page 27 (paragraph 2) states: "Furthermore, although water available within storage will not be tapped due to the net water surplus...". Data from the report indicates that pumped water will be derived from both "recharge" and "storage" under virtually all conditions. During some time periods, such as the wet weather period when the withdrawal test occurred, the dominant source may be recharge with less pumped from storage than during "normal" conditions. However, the report data indicate that the withdrawal test created a zone of influence (Figures 3-13, 3-16, and 3-18) and thus storage was evidently being tapped to some degree even under the November 2002 withdrawal test conditions, which were relatively wet.

Understanding the origin of water derived from a pumped well and its relationship to aquifer recharge, storage, and ultimately natural discharge is required by Env-Ws 388.06(1) and 388.14 and is fundamental element of an analysis to determine if the proposal is sustainable and will result in an adverse impact as defined by Env-Ws 388.18. It is also fundamentally important for delineating the wellhead protection area as required by Env-Ws 389.11(b) and Env-Ws 389.15. Water pumped from bedrock wells at USA Springs must either be derived from storage, increased recharge (induced infiltration of water stored in surface water bodies) caused by the pumping of the wells, and/or a decrease in natural discharge to the surface water resources. The degree that the withdrawal obtains water through one of these sources is essential for determining if an adverse impact may occur to private wells (by way of depleting storage) or water resources (by dewatering through increased recharge caused by pumping or by decreasing groundwater discharges to surface water bodies).

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is: 1) Not complete or correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20(a); and 2) Not assessed accurately to the extent that it can be demonstrated that the

withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 3) **Potentially Conflicting Elements of the Conceptual Model:** The conceptual model describing the relationship between recharge in the shallow overburden and the bedrock aquifer is not reconciled with the available data, or consistently developed and integrated. The application presents two conflicting conceptual models: (1) bedrock is vertically insulated from the surficial overburden and (2) bedrock is rapidly recharged by precipitation events so groundwater is not removed from local storage (i.e., bedrock wells are closely connected to the shallow overburden aquifer). Statements that reflect the conflict within conceptual models are presented below:

**Statements consistent with bedrock isolation from surficial overburden**

- On page 28, (paragraph 3), the report states *"minimal response was noted in the shallow overburden deposits during the withdrawal test"*.
- On page 32- 33, the report suggests that bedrock is insulated and vertically distant from events that occur on the surface that might cause contamination of the bedrock aquifer.
- On page 34 of the report, it is explained *"the water bearing fractures at the USA wells, especially USA-1 and 2 are at considerable depths below ground surface (ranging from 525-560 feet and 450-465 feet at USA-1 and USA-2 respectively); thus the water bearing fractures are naturally insulated (or vertically distant) from groundwater quality impacts identified in shallow overburden and the upper portion of the bedrock aquifer."*

**Statements consistent with bedrock being closely connected to overburden**

- On page 26, the report states: *"In addition, antecedent groundwater elevation data collected for approximately 4 weeks at residential bedrock wells indicated a significant (average 2.9 feet) increase in groundwater heads. These data demonstrate that the bedrock aquifer: 1) receives significant recharge from precipitation; and 2) responds relatively quickly to recharge events."*
- The report states on page 30, paragraph 3 that *"groundwater elevations at the on-site overburden piezometer/wells responded significantly (up to 7.5 feet at OW-1) and quickly in response to precipitation events during the antecedent monitoring."* OW-1 is screened in till, immediately above the bedrock aquifer.
- The data presented on page 31 indicate that the observed increases in piezometric head in bedrock fractures were an order of magnitude greater than the amount of precipitation received, suggesting direct recharge to bedrock from precipitation.
- Also on page 31, the report states that *"bedrock receives significant recharge from precipitation and the effect of recharge events are manifested within the bedrock aquifer (within days)"*, indicating that the bedrock aquifer is closely connected to the surface.

- Monitoring wells NBW and OW-1 exhibited water level rises during the withdrawal test. This may suggest that precipitation directly recharges bedrock.
- On page 23 of the report it is explained that "*the dip of the primary fracture (NE-SW) was almost vertical (89° degree SE) consistent with one of the conclusions of the VLF survey.*" Vertical bedrock fractures could facilitate the direct connection of the deep bedrock aquifer with the shallow bedrock aquifer and possibly the overburden.

The application presents a model whereby it depicts there being plentiful water available for groundwater development because the bedrock aquifer (source of water for the proposed well) is readily recharged by rain events, meaning that a strong connection of the ground surface and shallow overburden aquifers exist. But in sections of the application where a direct connection of the bedrock aquifer to shallow aquifers or surface water resources may present a model that could lead to the proposed withdrawal adversely impacting surface water bodies by dewatering or by altering the flow of groundwater contamination, the application presents a different model whereby the bedrock aquifer is isolated from shallow overburden aquifers and surface water bodies.

Accordingly DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19: 1) Is not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20(a); 2) Is not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2); and 3) Does not contain information demonstrating that the contamination source in the source water protection area is adequately controlled as required by Env-Ws 389.20.

- 4) *Interpretation of Water Level Measurements:* The report analysis states that deeper overburden wells show a greater response to pumping than shallower overburden wells (pages 28-29). However, there are other relationships that could develop this response. For instance, the precipitation effects on the deeper wells could be delayed relative to the shallow wells. Similarly, withdrawal test effects on the shallow overburden could be delayed relative to the deep wells. In addition to a delay affect, the report analysis may be skewed or misleading because it interprets water level measurements that have not been corrected to account for the effects of precipitation as required by 388.09(a), 388.14, 388.09(h), and Env-Ws 389.11(c). Env-Ws 388.09(h) and Env-Ws 389.11(c) reference the pumping test requirements contained in Env-Ws 379.11.

Understanding the response of the bedrock aquifer and overburden aquifers to either precipitation events or to the pumping of large withdrawals is essential for assessing the potential for impacts to existing water resources and users as required by Env-Ws 388, as well as a fundamental component of an analysis required to determine the source of recharge to pumping for the purpose of delineating a wellhead protection area in accordance with Env-Ws 389.11(b) and 389.15.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is: 1) Not complete or correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20(a); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 5) *Historic and Residential Water Quality Data:* Preliminary water quality results obtained after installing the wells and during the groundwater discharge permitting process were not included in the conceptual hydrogeologic model discussion as required by Env-Ws 388.06(c)(1). Historic data obtained from previous investigations are included in hydrogeological studies as standard practice. This data is commonly used to: 1) Verify the existing data quality; and 2) Reflect any changed conditions including an assessment of the cause of any changes. Where discrepancies exist between studies, a technical explanation needs to be provided and the data quality qualified accordingly. When information from multiple studies is consistent, more confidence is placed on the data, analysis, and recommendations contained in a given proposal.

In USA Springs' case, for example, Radium 226+228 exceeded drinking water standards set forth by Env-Ws 315.60 (which is referenced by Env-Ws 389.11(c)(3)c and 389.22) in the sampling conducted in October 2002, but is well below these standards in samples collected in November 2002. These results should be assessed to determine if groundwater derived from the pumping wells will meet drinking water standards or require treatment. Also, many of the results of water quality sampling conducted in September 2000 and October 2002 indicate that groundwater obtained from USA Springs' wells exhibit elevated concentrations of iron and manganese, and sometimes above the enforceable secondary water quality standards set forth by Env-Ws 319. The results of the water quality sampling conducted in November 2002 continue to show elevated concentrations of manganese, but this sampling event indicated that there are low concentrations of iron in the groundwater derived from USA Springs' wells. Based upon the conflicting sampling results, it is unclear if groundwater derived from USA-1, USA-2 and USA-4 will require treatment to continuously meet safe drinking water standards to meet the objectives of Env-Ws 389.11(b)(3) or (4).

Information in Section 3.4.1 of the application regarding the water quality relative to the private wells tapping the same bedrock aquifer is also not of sufficient detail to establish an understanding of baseline water quality. Due to insufficient detail in the final report and inconsistent water quality results, the baseline water quality of the bedrock aquifer is unclear. This needs to be established and documented in the application so that any changes in the water quality of groundwater derived from the bedrock aquifer can be assessed to determine if an adverse impact has occurred in accordance with Env-Ws 388.18(c)(10).

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20(a).

- 6) *Withdrawal Testing Data Processing to Incorporate the Effects of Changing Weather Conditions:* The basic purpose of the withdrawal test is to determine how the long term pumping of a proposed withdrawal will: 1) Affect the extent and nature of recharge to a multi-layer aquifer system potentially impacted by a proposed withdrawal; and 2) Impact the extent and location of natural discharge. The long term pump test should also provide an understanding of the zone of influence developed by a proposed withdrawal utilizing various analytical techniques that require aquifer water level measurements over time and production well discharge rates. This information, overlaid with an inventory of potential contamination sources and an inventory of water users and resources, is used

to determine if a proposed withdrawal will be able to continuously produce water that meets drinking water quality standards and if the withdrawal will adversely impact existing water users or water resources.

A withdrawal test is generally designed to collect data under pumping conditions over a relatively short period of time (5-10 days). This data is analyzed using analytical techniques to estimate the long-term impacts of a new withdrawal. When other hydraulic influences, such as rainfall, barometric pressure changes, snow melt, or water releases from impoundments, affect water level measurements prior to, during, or following a withdrawal test, these effects must be filtered out so that a valid understanding of the response of an aquifer system to pumping may be developed and used to estimate the magnitude of impacts associated with long-term pumping. For USA Springs, the adverse impact analysis for existing water users, water resources and wetlands is dependent on drawdown data collected during the withdrawal test, extrapolated to 180 days. The graphs of water levels presented in Appendix H, Table 3-8, Table 4-1, Table 4-2, Figure 3-13, Figure 3-14, Figure 3-15, Figure 3-16, Figure 3-17, Figure 3-18, and Figure 3-19 are presented as estimating drawdown in surface water bodies, monitoring wells, and residential wells after pumping 180 days with no recharge. However, the tables, graphs, and figures depict the actual observed water level measured prior to, and during, the withdrawal test with the addition of high recharge conditions that occurred prior to and during withdrawal testing. Therefore the extrapolation of drawdown data after 180 days of pumping using this data include the effects of recharge that occurred during the withdrawal testing program; consequently the actual drawdowns and associated impacts would be greater than presented in the application. Because adjusting for other hydraulic influences is generally essential for completing an accurate adverse impact assessment, the effect of recharge during the withdrawal must be "calibrated out" of the model, as required by Env-Ws 388.09(a), Env-Ws 388.14, Env-Ws 388.09(h), and Env-Ws 389.11(c), in order to present a valid impact assessment. Env-Ws 388.09(h) and Env-Ws 389.11(c) reference the pumping test requirements contained in Env-Ws 379.11.

The report indicates that 1.79 inches of precipitation fell in the three days immediately prior to the test. Although some of the precipitation fell as snow and was not immediately available as recharge, melting during the test probably allowed significant infiltration of water into the ground. An additional 0.55 inches of precipitation fell during the 10-day test. Specific examples of possible impacts caused by precipitation follow:

- The drawdown graphs in Appendix H which show water level increases in a number of on-site wells between 5000 and 6000 minutes after pumping began; and
- Water levels in off-site wells that were not apparently impacted by pumping generally showed a rise in water levels before and during the pumping test.
- An example of where precipitation may have masked pumping-induced drawdown may be the New Barn Well (NBW). The report (page 28) predicted no response at the NBW, even though Geosphere's 2001 short-term step tests indicated there was a response. The report's results for the NBW show no response due to pumping, as depicted on the arithmetic-scale graph of transducer data (Appendix H), but the vertical scale is not suitable and may have hidden a response. The semi-log plots for both manual and transducer data show apparent responses to both precipitation and pumping shutdown in the NBW.

In addition to not correcting for the groundwater and surface water level elevations for the effects of precipitation, the application did not qualitatively or quantitatively describe the impacts associated with discharge pipe leakage that may have affected water level measurements obtained from P-3S, P-3D, PS-3S, PS-3D, P-2S, P-2D and P-2S. The application also did not describe or correct for the constantly changing weather conditions that occurred prior to, and during, the withdrawal test to reflect the 180-day no recharge requirement of Env-Ws 388 or 389. Temperature data and weather conditions were not provided in the application as required by Env-Ws 379.11(e)5, 7 and 8 by references contained in Env-Ws 388.09(g) and 389.11(c). The period immediately prior to and during the withdrawal test were dominated by constantly changing and very contrasting weather conditions that included rain, snowfall, warm weather causing significant snow melt, and periods of below freezing temperatures causing surface water bodies to freeze. The occurrence of each of these climatic conditions can significantly affect water level measurements and therefore impact the interpretations or analysis completed using this data.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20(a); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 7) *Presentation of Raw and Processed Data from Withdrawal Testing:* The application does not contain raw data associated with the analyses contained in the report. Env-Ws 379.11(e)(8), which is referenced by Env-Ws 388.09(g) and Env-Ws 389.11(c), requires that water level data be presented in tabular form and describes the types of withdrawal testing data to be presented. This regulation requires that appropriate corrections for other hydraulic influences on water elevations be made. Both recorded and corrected water levels are to be plotted versus time, as spelled out in detail in Env-Ws 379.11(e)(8)c. Standard industry practice is to provide both the raw and processed data for many reasons including:
- a) Identifying any raw data that has been modified during the processing of the data for graphing purposes.
  - b) Identifying where there are discrepancies between measurements that were collected using automated devices such as transducers/data loggers versus those that were collected manually at the same monitoring location. For instance, in the water level graphs presented in Appendix H, some manual water level measurements appear inconsistent with the measurements collected by the pressure transducer (see graphs for PS-2S, PS-4S, PS-8S for examples), but this would be more easily assessed if actual water level measurements and associated dates and times could be compared.
  - c) Identifying which raw data was intentionally omitted or adjusted from graphs due to equipment malfunctions or drift in instrument calibration. For instance, DES observed in the field that the measurements in the transducers did not always reset to original baseline conditions when removed from, and placed back into, wells for daily inspection. While this is a common occurrence with these devices for which data corrections are appropriate, the methodology for correcting the measures should be explained and fully justified.

- d) Presenting information that confirms the frequency of measurements, including actual date and time to further authenticate and validate data collected in the report.
- e) Providing raw data for the record in the event a proposed project is approved and begins operating, but it is later determined that additional data analyses is required by DES or applicant to assess a changed or unanticipated condition.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20; and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 8) *Delineation of the Zone of Influence:* The application does not provide a clear basis for delineating the extent of the zone of influence shown in Figure 3-13 relative to all orientations of the site and the network of wells monitored during the withdrawal test. The network of wells did not extend in the northern, western, or southern direction of the site to a distance where no response to pumping was observed. The application does not provide a technical justification for estimating the extent of the zone of influence (or "cone of depression") to compensate for the lack of monitoring points in these directions. The delineation of a zone of influence is required by Env-Ws 388.14 and Env-Ws 388.06(i)(3)a, and is a necessary activity to determine which water users and resources, identified in accordance with Env-Ws 388.15, may be adversely impacted as described by Env-Ws 388. The delineation of the zone of influence is also a partial basis for the delineation of the wellhead protection area required by Env-Ws 389.15.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20; and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 9) *Accuracy of Measurement of Withdrawal Testing Discharge Measurements:* The withdrawal test used flow meters instead of orifice weirs, and the calibration certification for the meters had expired prior to the date of the withdrawal test (Appendix H.9). Env-Ws 379.11(e)(2)c, which is referenced by Env-Ws 388.09(g) and Env-Ws 389.11(c), stipulates that "*the discharge rate from the test well shall be measured using a circular orifice weir or other device which provides measurements of equal precision.*" When flow meters are used, it is common practice to provide a secondary method to measure discharge rates at some point in the discharge line and/or to use orifice weirs to verify the accuracy of the flow meters. Appendix H.9 contains a letter describing the accuracy of the water meter used in the mobile treatment unit (a potential secondary measurement opportunity), but the report does not contain any flow recordings for this meter. Assuming that quantity of water pumped is tied to the degree of impact on domestic wells, wetlands and contamination migration, confidence in the precision of the discharge measurements is critical to establish a technically sound basis for a permitted production volume in accordance with Env-Ws 388.24 and Env-Ws 389.12, for ensuring

that the withdrawal test estimated the effect of the proposed withdrawal under maximum production volume criteria as required by 388.09(a), and to ensure compliance with Env-Ws 388.09(e) which states a permitted production cannot exceed the production volume demonstrated during the withdrawal test. Having confidence in the measured discharge rate is important in the event a permit is issued with an ongoing monitoring, reporting and mitigation program in accordance with Env-Ws 388.20-388.21.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20; and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 10) *Stability of Discharge Rate During Withdrawal Testing:* Env-Ws 379.11(e)(2)e (referenced by Env-Ws 388.09(g) and Env-Ws 389.11(c)) requires that the *"test well shall be pumped at a single, constant rate"*, but does not specify a tolerance limit. After installing the new meter on USA-1 on 11/22/02, no interruptions were recorded, and all three wells had constant "target rates" for the rest of the test. However, significant (>10%) fluctuations relative to the target rates are noted in Appendix H.1. Presentation of average pumping rates (and deviations) for each well for the last 7 days of the test are necessary, as is discussion of the effects of the discharge deviations on the key interpretations for the analysis relative to the requirements of Env-Ws 388 and 389. Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20.
- 11) *Water Quality Sampling Documentation:* Env-Ws 389.11(f) and Env-Ws 388.09(i) require that all procedures for collecting water quality samples from the monitoring and residential wells be provided. Typically, this information includes a description of equipment and methods used to purge and collect water samples, calibration logs of all field monitoring equipment, volume of water purged from each monitoring well, water level measurements before and after the sampling event, and the data describing the water quality parameters and water level measurements that were obtained during the sampling and the purging of water from each monitoring well. This information is not included in the application. Sample collection techniques can significantly affect the concentrations of volatile organic contaminants in a groundwater sample from a given monitoring point, and this data must be included to determine if the data is of sufficient quality and to assess water quality sampling results relative to multiple sampling events or from one monitoring point to another during a given sampling event. Chain-of-custody forms must also accompany all laboratory reports to ensure that the sample was properly preserved, stored, and transported to the laboratory. These forms were not included in the application. The chain-of-custody forms also provide the names and signatures of the individuals responsible for the sample collection, storage, and laboratory processes. Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20.
- 12) *Soil Sampling Documentation:* Env-Ws 389.11(f) and Env-Ws 388.09(i) require that all procedures for collecting soil samples be provided. Appendix G of the report contains the analytical results of

range that exceeds the actual fluctuation of water levels by one or two orders of magnitude, making it very difficult and in some cases impossible to determine if a shallow well responded to the pumping of the wells at USA Springs. Therefore it cannot be determined if the proposed withdrawal may cause fluctuations in surface and groundwater elevations that are potentially significant (see graphs for DP-1S(in), DP-1S(out), DP-2S, PS-1S, PS-2S, PS-4D, PS-5S, PS-5D, PS-6S, and PS-7S as partial examples in Appendix H of the application). Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 16) *Effects of Precipitation Data on Data Obtained from the Withdrawal Test on the Wetland Impact Assessment:* As described in Finding 6 above, rain, snow, temperature fluctuations, and discharge pipe leakage may have an effect on water levels during the withdrawal test. Measurements obtained from monitoring points located in the shallow overburden and surface water bodies also appear to be impacted by weather trends (see water level elevations measured during the antecedent and pumping periods for OW-1, DP-1S, PS-2S, PS-3S, PS-4S, PS-8S, PS-9S, P-1S, P-1D, P-2S, P-2D, P-3S, P-4S, P-4D, P-5S, P-5D, P-6S, P-6D, P-8S, P-8D, P-9S, and P-9D).

Env-Ws 388.20(a)(1) describes the need to conduct ongoing monitoring upon operating a withdrawal when withdrawal testing data are not sufficient to verify that adverse impacts from a large withdrawal will not occur. Although the withdrawal test included a substantial number of monitoring points, many of the responses observed from shallow overburden and surface water monitoring locations were dominated by very high precipitation and highly variable climatic conditions. These influences caused the water level in the shallow monitoring wells to rise an order of magnitude higher than the typical range of drawdown that is caused by a ten day withdrawal test. This means that even if corrections for precipitation are applied, that much of the environmental monitoring data collected during the withdrawal testing program will be ambiguous.

The application does not contain a monitoring, reporting, and mitigation program prepared in accordance with Env-Ws 388.20 and 388.21 to compensate for insufficient and incomplete data that exists to complete an adverse impact assessment in accordance with Env-Ws 388.20 as allowed by Env-Ws 388.20(a)(1). The monitoring, reporting, and mitigation program presented in Section 4.2.3 of the report is very limited in scope, and only monitors the prime wetland immediately adjacent to the site. A comprehensive monitoring, reporting, and mitigation plan must be developed and implemented that protects the functions and values for all wetlands within a zone of influence that is delineated in accordance with Env-Ws 388.09(a), Env-Ws 388.06(h) or Env-Ws 379.11(e)(8) in order to ensure that adverse impacts as defined by Env-Ws 388.18(c)(6) and (7) do not occur.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

range that exceeds the actual fluctuation of water levels by one or two orders of magnitude, making it very difficult and in some cases impossible to determine if a shallow well responded to the pumping of the wells at USA Springs. Therefore it cannot be determined if the proposed withdrawal may cause fluctuations in surface and groundwater elevations that are potentially significant (see graphs for DP-1S(in), DP-1S(out), DP-2S, PS-1S, PS-2S, PS-4D, PS-5S, PS-5D, PS-6S, and PS-7S as partial examples in Appendix H of the application). Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 16) *Effects of Precipitation Data on Data Obtained from the Withdrawal Test on the Wetland Impact Assessment:* As described in Finding 6 above, rain, snow, temperature fluctuations, and discharge pipe leakage may have an effect on water levels during the withdrawal test. Measurements obtained from monitoring points located in the shallow overburden and surface water bodies also appear to be impacted by weather trends (see water level elevations measured during the antecedent and pumping periods for OW-1, DP-1S, PS-2S, PS-3S, PS-4S, PS-8S, PS-9S, P-1S, P-1D, P-2S, P-2D, P-3S, P-4S, P-4D, P-5S, P-5D, P-6S, P-6D, P-8S, P-8D, P-9S, and P-9D).

Env-Ws 388.20(a)(1) describes the need to conduct ongoing monitoring upon operating a withdrawal when withdrawal testing data are not sufficient to verify that adverse impacts from a large withdrawal will not occur. Although the withdrawal test included a substantial number of monitoring points, many of the responses observed from shallow overburden and surface water monitoring locations were dominated by very high precipitation and highly variable climatic conditions. These influences caused the water level in the shallow monitoring wells to rise an order of magnitude higher than the typical range of drawdown that is caused by a ten day withdrawal test. This means that even if corrections for precipitation are applied, that much of the environmental monitoring data collected during the withdrawal testing program will be ambiguous.

The application does not contain a monitoring, reporting, and mitigation program prepared in accordance with Env-Ws 388.20 and 388.21 to compensate for insufficient and incomplete data that exists to complete an adverse impact assessment in accordance with Env-Ws 388.20 as allowed by Env-Ws 388.20(a)(1). The monitoring, reporting, and mitigation program presented in Section 4.2.3 of the report is very limited in scope, and only monitors the prime wetland immediately adjacent to the site. A comprehensive monitoring, reporting, and mitigation plan must be developed and implemented that protects the functions and values for all wetlands within a zone of influence that is delineated in accordance with Env-Ws 388.09(a), Env-Ws 388.06(h) or Env-Ws 379.11(e)(8) in order to ensure that adverse impacts as defined by Env-Ws 388.18(c)(6) and (7) do not occur.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 17) *Impact Assessment to the On-Site Beaver Pond and Other Wetlands:* The report includes the statement that “*potential loss in groundwater discharge to the on-site Beaver Pond (BPW40) is insignificant compared to the storage in the Pond and the flow rate observed in the Unnamed Creek during the test*” (page 38). The report’s wetland leakage analysis estimates the amount of upward flow from shallow overburden to the wetland under non-pumping conditions, and it also estimates the amount of downward flow from the wetlands to shallow overburden after 180 days of pumping with no recharge. The report’s analysis then combines these two results to obtain the “total difference in leakage” (Table 4-2) of 0.16 cu. ft./min.

The report presents limited data characterizing the geologic deposits beneath BPW40. The drilling and boring logs in Appendix E contain geologic information for one point (DP-1) in BPW 40. This log indicates only that 4 feet of muck (loose, wet, brown, suspended fine organic material with sticks) is underlain by 3.5 feet of “wetland deposits” that were not sampled or described. With this limited information, the magnitude of leakage that would occur in response to head differences between the wetlands and the shallow overburden cannot be accurately predicted. The application omits and provides no discussion regarding the following:

- a) How unknown variations in the thickness of sediments underlying the wetland were accounted for in the analysis;
- b) How the heterogeneity and occurrence of preferential pathways in the sediments underlying the wetlands were accounted for in the analysis;
- c) How the method for estimating the hydraulic conductivity of the sediments underlying the beaver pond was correlated with the physical properties of the actual sediments. The vertical hydraulic conductivity value used in the calculations is taken from a single triaxial permeability test on a sample collected from OW-1D, located outside of wetlands and more than 1000 feet away from BPW40. The report acknowledges (page 39) the discrepancy, but states that the vertical permeability result “*is conservative because the fine-grained, organic-rich wetland/pond deposits are expected to have a lower vertical conductivity*”;
- d) Why the water levels used to estimate vertical gradient were not corrected to adjust for recharge from precipitation that occurred immediately prior to and during the withdrawal test;
- e) Whether the results of water level monitoring at DP-1S may suggest that the beaver pond acts as a boundary condition, given that the water level in the shallow subsurface equilibrates with the water level of the beaver pond during withdrawal testing;
- f) Why the leakage analysis was limited to only 50,000 ft<sup>2</sup> of the pond bottom given that:
  - i) The zone of influence of analysis did not correct for precipitation that occurred prior to or during the withdrawal test;
  - ii) The water level monitoring network consisted of driven monitoring points in and around the wetland. Therefore, the soils underlying the adjacent prime wetlands (BPW40) were not directly characterized so the vertical placement of the piezometer screens does not have a well-supported technical basis; and

- iii) The pond may act as a hydraulic boundary to the underlying aquifers.
- g) Why the wetlands leakage analysis and water budget (pages 38–40 and Table 4-2) was not corrected to dry weather conditions from the relatively high flows and surface water levels that existed during the withdrawal test. The data presented in page 40 of the report supports USA Springs' observation that there was no response noted in overburden deposits near Nottingham Critical Wetlands (CI)/Barrington Prime Wetlands #39 and Barrington Prime Wetlands #10, but the effects of precipitation on the data are not considered. This conclusion is logically extended to *"far-field wetlands located within the Study Area."* Also, the report extends the observations for these two wetlands to make the conclusion that *"there will be no adverse impacts to any far-field wetlands located within the Study Area."* Similarly, the potential impacts to these wetlands need are not assessed for dry conditions for those wetlands that may overlie certain bedrock fracture zones (and thus experience preferential drawdowns). Also, PS-2S, located near a small wetland near pumping well USA-2, showed a slight response (rise in water level) at the time of pumping shutdown that is not considered in the application (see graph in Appendix H).

The application must either contain the information listed above, or an impact monitoring and reporting program in accordance with Env-Ws 388.20 to address these data gaps. The application contains neither. Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 18) *Impacts to On-site Beaver Pond During Low Flow Conditions:* On page 40 of the report, it is concluded that *"both the large flow volume in the Unnamed Creek and the large storage of the pond are expected to minimize any potential effect of the proposed withdrawal on the wetland system and pond."* The conclusion that pond storage will help minimize pumping effects implies that USA Springs believes that infiltration of water from the pond may occur during pumping. The report does not discuss the effect that pumping the wells during a time of reduced (or even zero) flows in the Unnamed Creek would have on the amount of water in the pond. If stream flow were reduced or eliminated, and if groundwater discharge to the wetland ceased, the pond would lose storage due to evaporation, surface water outflow, and possible infiltration into the ground under pumping stress. These potential wetland effects are not assessed in the application. The water budget also does not incorporate the loss of water to evapotranspiration, as well as the issues described in Finding 17, above.

The application must either contain the information listed above, or an impact monitoring and reporting program in accordance with Env-Ws 388.20 to address these data gaps. The application contains neither. Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 19) *Miscellaneous Omissions in the Application Relative to Wetland Assessment:* Appendix D of the application contains the following omissions or information that is provided has not been updated from the preliminary application to reflect information contained in other sections of the application:
- a) Table 1 which is referenced on page 1, paragraph 2, but is not included in the appendix;
  - b) A revision of this section to reflect the zone of influence that was delineated in accordance with the requirements of Env-Ws 388.09(a), Env-Ws 388.06, Env-Ws 388.14 and Env-Ws 379.11(e)(8);
  - c) A figure showing the location of onsite wetlands that are described in Attachment C; and
  - d) An explanation of how the requirements of Env-Ws 388.09(d) which requires the monitoring of representative wetlands were complied with.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 20) *Private Well Adverse Impact Assessment:* The application states that the pumping of the three wells may dewater the water column in private wells by a factor of only 10% (page 35). However, this much dewatering may result in the dewatering of a primary water bearing fracture that supplies water to the well, and, as a result an adverse impact in accordance with Env-Ws 388.18(c) could occur. This means an alternative water supply may have to be provided to these water users. The application does not contain a mitigation program in accordance with Env-Ws 388.21(a)(1) as required by Env-Ws 388.17(c).

Projected 180-day drawdown results (Table 4-1) show that four of the domestic wells monitored would experience a drawdown greater than or equal to 10% of the available water column under high recharge conditions. All of these wells (Brett and Stephanie Gillespie, Irene Gillespie, James Page, Jr. and John Pierce) are located along Rt. 4 (Old Turnpike Road), west of the USA Springs site (Figure 3-13). The Brett and Stephanie Gillespie well has a projected drawdown of 61 feet, and the Page well shows a projected drawdown of 39 feet and is more than 3000 feet away from the nearest USA Springs pumping well. Additional wells in this vicinity have projected drawdowns that are greater than 5% of the water column. Of the four wells with greater than 10% projected drawdown, none has a Well Completion Report in Appendix C, and Appendix C contains a questionnaire only for the Pierce well. This questionnaire indicates that a new pump motor was installed in March 2002, but does not provide pump depth or other information. The application asserts (page 35) that "*anticipated depth of pump intakes (is) expected to be ... at sixty to seventy-five percent of the well depth*", but provides no evidence. The report predicts "*no loss of available water to the users of these wells.*" Based on the data presented in the application, this assertion has not been justified.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed

accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 21) *Private Well Adverse Impact Assessment and Mitigation:* The application indicates that pump intakes of private wells will be lowered (page 35) to mitigate an impact. However, this mitigation measure may not be adequate to prevent an adverse impact from occurring in accordance with Env-Ws 388.18(c) as required by Env-Ws 388.23(b)(2). Loss in hydraulic head within the water column of the well casing may cause a well pump to fail, and a new more powerful pump may need to be installed to off-set head losses caused by the pumping at USA Springs.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 22) *Private Well Adverse Impact Assessment and Mitigation for Water Users Not Monitored During Withdrawal Testing:* The application states "there is no current evidence that suggests that adverse impacts will occur, similar minor mitigation steps (i.e. – lowering the pump) might be required at very few other private wells"(page 35). The application does not identify which area and wells USA Springs is referring to. Also, impacts were observed at the edge of the monitoring network in the westerly direction during withdrawal testing, however the application did not describe or assess how much further beyond the network impacts may extend. Other wells in the area were not monitored during the test, and some of these may also experience significant drawdowns during USA Springs' pumping. The application does not contain an impact monitoring and reporting program in accordance with Env-Ws 388.20 or a mitigation program in accordance with Env-Ws 388.21(a) as required by Env-Ws 388.17(c) to respond to these data gaps and potential adverse impacts.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 23) *Discrepancies in Water Quality Sampling Results:* The last two lab reports in Appendix G (samples 75790 and 75791) of the application are both labeled as collected from well OW-1, but show very different results (both in amount of volatile organic compounds (VOCs) concentrations and type of constituents present). There is no explanation for the discrepancy meaning that there is substantial ambiguity regarding the occurrence of groundwater contamination at this portion of the site.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 and Env-Ws 389.19 is not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20.

- 24) **Public Notification:** The Study Area delineated pursuant to Env-Ws 388.06 and 388.14 in Figure 3-1 and described in the report on page 7, paragraph 4, includes the Town of Northwood and a public water system in Barrington, in addition to the Town of Nottingham and Barrington which were included in the original study area delineation. It is DES's understanding that the Town of Northwood and the public water system at the Barrington Home Estates have not received notification in accordance with RSA 485-C:14.

Accordingly DES finds that the information in the report produced in accordance with Env-Ws 388.17 is not complete and correct as required by Env-Ws 388.23(b)(1).

- 25) **Demonstration of Need/Water Efficiency:** RSA 485-C and Env-Ws 388.05 require that an applicant demonstrate a need for a proposed withdrawal. The report requests a permitted withdrawal volume that appears to exceed the volume of water that can be trucked off-site based upon local zoning (see letter and attached affidavit from Town of Nottingham to DES dated March 14, 2003). The report does not address local zoning restrictions on trucking, but rather points to the consumer demand for bottled water as a basis of need. State law (RSA 485-C:4, XII, b) relates the "Demonstration of Need" specifically to implementing water conservation techniques when developing a new large groundwater withdrawal. A permit cannot be issued for a withdrawal volume for the amount of water that exceeds the amount the applicant has demonstrated a need for while implementing water conservation measures, as this would allow for the inefficient use of water.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is not complete and correct as required by Env-Ws 388.23(b)(1).

- 26) **Monitoring and Reporting Program:** On page 41 of the report, it is explained that the objective of the proposed future monitoring and reporting program is to: *"1) Confirm the conclusions reached on the basis of the withdrawal test; 2) Ensure that the operation of the proposed withdrawal does not have any adverse impacts on current water users or wetlands; and 3) Collect data needed to make necessary operational changes."* An additional objective of the future monitoring and reporting program must be to address the condition described by Env-Ws 388.20(a)(1). This regulation describes the need to conduct ongoing monitoring upon operating a withdrawal when withdrawal testing data is not sufficient to verify that adverse impacts from a large withdrawal will not occur. Although the withdrawal test included a substantial number of monitoring points, much of the response observed from shallow overburden and surface water monitoring locations was dominated by very high precipitation and highly variable climatic conditions. These influences caused the water level in the shallow monitoring wells to rise at an order of magnitude higher than the typical range of drawdown that is caused by a ten-day withdrawal test. This means that even if corrections for precipitation were applied to the data and analysis in the application, much of the wetland environmental monitoring data would likely remain ambiguous and require ongoing monitoring in accordance with Env-Ws 388.20.

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1); and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

- 27) **Uncontrolled Contamination Sources:** An understanding of the groundwater flow regime is fundamentally necessary before assessing the possible relationship between contamination sources and the proposed major groundwater withdrawal relative to requirements of Env-Ws 388 and 389. Information in the application regarding the hydrogeologic conceptual model, estimation of the source water protection area and the zone of influence was used as a basis of DES's findings below even though DES found problems with this information as described in the findings and decisions above. These findings and decisions are generally not repeated in this section, but rather findings and decisions specific to issues of contamination monitoring and management are discussed to identify additional deficiencies in the application.

### **Regulatory Background**

#### **Bottled Water Regulations Pertaining to Groundwater Contamination – Env-Ws 389**

Env-Ws 389.20(c) – Criteria for Approval or Denial of New Sources, states that *“the proposed source shall be denied under the following conditions:*

- 1) *If an inadequately controlled contamination source is present in the source water protection area; or*
- 2) *If the applicant has failed to perform any activity or to meet any of the requirements contained in these rules.”*

The Bottled Water Rules (Env-Ws 389.17 – Contamination Control Program) also states:

- “(a)The applicant shall establish a contamination control program which minimizes the risk of contamination from known sources of contamination.*
- (b) The program shall include provisions and a schedule for remediation and/or monitoring of residual contamination from all known contamination sources, identified in accordance with Env-Ws 389.16, which ensures that contamination shall not reach the groundwater source of bottled water.*
- (c) Compliance of a known contamination source with the conditions of a groundwater management permit in accordance with Env-Ws 410 or successor rules, shall constitute an adequate control program.*
- (d) A description of the contamination control program and supporting evaluations and documentation shall be provided in the report required in accordance with Env-Ws 389.19.”*

***Large Groundwater Water Withdrawal Regulation – Env-Ws 388***

The large groundwater withdrawal regulations Env-Ws 388.23 (b)(2) states that a large groundwater withdrawal may only be issued *“when information in the report produced in accordance with Env-Ws 388.17 demonstrates that the withdrawal will:*

- a. Not produce adverse impacts; or*
- b. Result in impacts that can and will be mitigated, provided:*
  - 1. There is sufficient information to verify that any adverse impacts that occur as a result of the withdrawal will not be:*
    - (i) An adverse impact that may occur immediately; and*
    - (ii) An irreversible impact.”*

Env-Ws 388.18(c)(10) states that for major withdrawals an adverse impact includes the *“contamination of groundwater obtained from wells or surface waters from contaminated groundwater whose flow has been altered by the withdrawal.”*

**Findings and Decisions Regarding Uncontrolled Contamination Sources in the Application**

Regulated contaminants as defined by Env-Ws 389.03 exist in the proposed source water protection area and estimated zone of influence delineated within the application. These contaminants are located immediately adjacent to the site to the west. The contaminants present include those regulated by the Safe Drinking Water Act – RSA 485 and associated regulations Env-Ws 310-319, and contaminants regulated by the Groundwater Protection Act – RSA 485-C and associated regulation Env-Ws 1403 that establish the ambient groundwater quality standards. Nine different VOCs were detected in wells located on USA Springs' Property, and five wells exhibited the presence of chlorinated VOCs. Three on-site wells exhibit concentrations of chlorinated VOCs that exceed Ambient Groundwater Standards set forth by RSA 485-C:2, and two on-site wells exhibit concentrations of chlorinated VOCs that exceed Drinking Water Quality Standards as set forth by RSA 485.3. The contamination on-site is present in the shallow overburden aquifer, deep overburden aquifer, and in the bedrock aquifer.

Although not included in the application, DES has obtained water quality data and “Notification of a Groundwater Quality Violation” for the K&B Realty property, located immediately west of USA Springs. Eight water quality samples were collected from this property, and four of the water samples exhibited the presence of eleven different VOCs. Four of the water samples contain chlorinated VOCs that exceed Ambient Groundwater Standards set forth by RSA 485-C:2. Three of the water samples contain chlorinated VOCs that exceed Drinking Water Quality Standards as set forth by RSA 485.3. No information has been provided describing the construction details of the wells or sampling methodologies for the site.

In addition to the chlorinated volatile organic compounds detected in the groundwater in wells installed at the K&B Realty site and the USA Springs site, toluene, xylene, and MTBE were detected

in water samples collected at the USA Springs site or at the K&B Realty Site. Often, the sporadic occurrence of trace concentrations of toluene detected in groundwater is associated with materials used to construct, pump or sample the groundwater, and these measurements are considered to be anomalies that are verified through follow-up water quality sampling. However, toluene was routinely detected in groundwater samples obtained from well on the K&B Realty and USA Springs site.

The application does not contain information necessary to meet the requirements of Env-Ws 389.20(c) or Env-Ws 389.17 which are applicable when contamination exists in the source water protection area. Section 3.4.3 of the application proposes a conceptual design for a hydraulic barrier to contain VOCs. However, the application does not provide conclusive information regarding the source of the contamination, and the vertical and horizontal extent of the contamination, and therefore putting forth technically defensible remediation designs is not possible. Furthermore, USA Springs proposes to install an extraction and injection system onsite to achieve hydraulic containment. However, it is known that contamination and the zone of influence associated with USA Springs' withdrawal exists off-site, and therefore it is not apparent that an on-site containment system will capture and contain contaminated groundwater, and block the migration of contamination to the pumping wells at USA Springs and all of the residential wells that tap the same bedrock aquifer in the zone of influence of the proposed withdrawal. The design of a typical containment system includes extensive site investigations in the vicinity of the contamination and pumping wells, and the development of a calibrated multiple layer three-dimensional groundwater flow and fate and transport models to demonstrate that the proposed hydraulic containment system is effective at not only altering groundwater gradients, but also effective in actually capturing contamination, and blocking the migration of contamination to all pumping wells.

There are no reliable analytical desktop techniques that could determine how the shallow and deep overburden aquifers and the bedrock aquifers would exactly respond when operating the proposed withdrawal at USA Springs with a containment system nearby. Nor is there an adequate amount of data available to complete such analysis, because the withdrawal test performed by USA Springs was not designed to obtain the data necessary to design an off-site containment or remediation system or to assess how such a remediation system would respond when the proposed large withdrawal is activated. This information would have to be collected by conducting tests in the field, and it appears that work of this nature has not been completed. If ultimately additional withdrawals will occur as part of a remediation or containment system, then these new stresses will have to be assessed cumulatively with the withdrawals proposed for the bottling plant in accordance with Env-Ws 388.06(m)(4), Env-Ws 388.06(l), and Env-Ws 388.14.

The operation of the large withdrawal from bedrock at USA Springs in close proximity to VOC contamination is further complicated by preferential fracture flow, the interconnectivity of the overburden and bedrock aquifers, and the number and proximity of private water supply wells installed in the bedrock aquifer in the zone of influence of the proposed withdrawals. Data from the withdrawal test demonstrates that the pumping of the proposed wells causes the greatest amount of drawdown in bedrock wells surrounding the K&B Realty site (see Figure 3-13). USA Springs' proposed pumping wells are installed in the deep bedrock aquifer, and therefore the pumping of these wells will draw water from a fracture network in the bedrock and from the overlying overburden aquifer. Most of the residential wells surrounding the USA Springs site and in the zone of influence delineated in the application also obtain water from wells installed in the shallow or deep bedrock

aquifer. Contamination has been identified as occurring in the shallow overburden, deep overburden, and bedrock aquifer. This means that a containment system will have to be effective at not only preventing the horizontal migration of contaminants towards USA Springs' site in the horizontal direction, but also the downward vertical migration where water is drawn from the overburden into fracture flow network when the wells at USA Springs are pumping. According to the application, the majority of the water derived from the wells at USA Springs comes from an area fully encompassing the K&B Realty site, and therefore it will be very difficult to design a remediation system to contain contamination in the overburden and bedrock aquifers while the pumping of the USA Springs wells is depressing the water table in the deep overburden, shallow bedrock aquifers, and deep bedrock aquifer. Yet this containment is required to demonstrate that an adverse impact will not occur by drawing contaminants into the bedrock aquifer that is the drinking water source for the majority of the residents in this area and the source of water for USA Springs' proposed wells. The vertical control of contaminant migration is further complicated by the fact that the contaminants of concern are chlorinated organic compounds with a density greater than water, meaning that over time they will migrate in a downward vertical direction.

The data in the application does not support its assertion that water bearing fractures for USA Springs' extraction wells 1 and 2 are naturally insulated (or vertically distant) from the groundwater quality impacts identified in shallow overburden and the upper portion of the bedrock aquifer for the following reasons:

- a) The application demonstrates that the pumping of the wells alters water levels in the deep overburden aquifer (DES does not believe the application provided sufficient information describing the communication with the shallow aquifer due to high recharge events, and this relationship must also be characterized).
- b) There is evidence that a chlorinated solvent was detected in the proposed extraction well, USA-4. Based upon step-test data obtained by Geosphere in 2001, USA-4 is interconnected with the other two extraction wells, USA-1 and USA-2.
- c) The application indicates repeatedly that the bedrock aquifer is readily recharged by precipitation. The application also states that recharge to USA-1, 2, and 4 comes from a relatively small source water protection area. If this is the case, the fact that the withdrawals are readily recharged from a small area containing the contamination site with no controls does not support the application's assertion that there is a natural barrier between the contaminated site and the deep bedrock aquifer which is the source of USA Springs' proposed withdrawals.
- d) Contamination has already been determined to be present in the shallow overburden, deep overburden, and bedrock aquifer, therefore there does not appear to be an effective natural barrier as suggested by the application.
- e) Contradictions exist regarding the conceptual model contained in the application (see Finding 3). Therefore, the application does not provide a convincing argument that contamination is insulated from the water bearing fractures of USA Springs' production wells. Many sections of the application assert a strong connection of the bedrock aquifer, the proposed pumping

wells, and recharge from precipitation, so it does not seem possible that a natural barrier exists for contamination, but not for water derived from precipitation.

Env-Ws 388.18(c)(10) states that an adverse impact includes *"the contamination of groundwater obtained from wells or surface waters from contaminated groundwater whose flow has been altered by the withdrawal."* The application provides data that assesses the relationship between the USA Springs' withdrawals from bedrock wells, and water levels in the overburden and bedrock aquifers. The application determined that the pumping of the wells at USA Springs caused the most impact to water levels wells located on Route 4, in close proximity to the K&B Realty property. According to the application, groundwater samples obtained from monitoring OW-1, OW-1D, OW-3, and OW-4 all exhibited groundwater contamination. The application also indicated that the water level in monitoring well P-8D, installed in the deep overburden, responded to the pumping of the bedrock wells. P-8D was the only deep overburden well monitored in close proximity to the contaminated area of the site. The change in water level in P-8D was noted apparently without correcting the water levels for high recharge events (see Section 2.1.1). This information suggests that an adverse impact as described by Env-Ws 388 (c)(1) may occur immediately. The application also does not contain information to support its assertion on pages 33-34 that the groundwater contamination is "no doubt" stable. Even the limited data presented in Tables 3-11 and 3-12 show major fluctuations in VOC levels, contradicting the conclusion that conditions are stable.

Env-Ws 388.23 (b)(2) states that a large groundwater withdrawal may only be issued *"when information in the report produced in accordance with Env-Ws 388.17 demonstrates that the withdrawal will:*

- a. Not produce adverse impacts; or*
- b. Result in impacts that can and will be mitigated, provided:*
  - 1. There is sufficient information to verify that any adverse impacts that occur as a result of the withdrawal will not be:*
    - (i) An adverse impact that may occur immediately; and*
    - (ii) An irreversible impact."*

The application contains insufficient information to demonstrate that an adverse impact will not occur due to the alteration of the flow of contaminated groundwater. It also does not include a monitoring, reporting, and mitigation plan to prevent the occurrence of such an impact. Even if provided, a mitigation plan may have not satisfied the requirements of Env-Ws 388.21(a)(2) which requires the development of a monitoring and reporting program to accompany a mitigation plan, because there does not appear to be sufficient information in the application to demonstrate compliance with Env-Ws 388.20(a)(1). This regulation states that monitoring and reporting is not allowed in lieu of data obtained during withdrawal testing if an impact may be "irreversible" or "will occur immediately". The alteration of contaminated groundwater flow would likely result in the immediate and, for all practical purposes, irreversible contamination of groundwater that is also utilized by other private water users. Although all groundwater contamination can ultimately be remediated the term

"irreversible" is determined to be applicable to this scenario because remediation can take years to decades to complete.

In summary, the application contains the following deficiencies relative to uncontrolled contaminations sources:

- a) The proposed source has an inadequately controlled source in the source water protection area as described by Env-Ws 389.20(c)(1) and the application does not contain the basic elements for the Contamination Control Program required by Env-Ws 389.17.
- b) Basic hydrogeologic data contained the application does not meet the requirements of Env-Ws 389 or Env-Ws 388.
- c) The withdrawal proposed in the application may result in an unmitigated impact as defined by Env-Ws 388.18(c)(10) if the withdrawal was approved. The application does not contain sufficient information to determine that a hydraulic containment system could prevent the proposed large groundwater withdrawal from altering the flow of contaminated groundwater, thus impact other private water users. The application also does not contain information that demonstrates that the impacts associated with the withdrawal will not be immediate or irreversible as required by Env-Ws 388.20(a)(1).

Accordingly, DES finds that the information in the report produced in accordance with Env-Ws 388.17 is: 1) Not complete and correct as required by Env-Ws 388.23(b)(1) and Env-Ws 389.20; and 2) Not assessed accurately to the extent that it can be demonstrated that the withdrawal will not produce impacts or result in impacts that can and will be mitigated as required by Env-Ws 388.23(b)(2).

Exhibit E

September 8, 2005

Brandon Kernen  
NHDES-WSEB  
PO Box 95, 29 Hazen Drive  
Concord, NH 03302-0095

RE: Additional Comments on USA Springs Application for New Sources of Bottled Water (Env-Ws 389)

Dear Mr. Kernen:

This letter represents additional comments that I am submitting on the above-referenced application. Needless to say I am pleased that you have granted a two-week extension to submit comments on this proposal given the extenuating circumstances and the unresolved contamination issues. Having had more time now to review the application, I am more adamant in my opposition to DES granting approval with so many deficiencies associated with it.

The unresolved issues associated with the original review of the application(s) performed by both Dr. Vernon Gordon at ENSR International (for DES) and Dr. Tom Ballesterio (for the Town of Nottingham, Board of Selectmen), need to be addressed before any approval is granted to the applicant. The public interest must outweigh any political expediency that the applicant appears to have been given under the Env-Ws-388 review process that followed the original denial based on 27 different scientific reasons.

The decision by DES not to require the applicant to sample for uranium and other related constituents as a requirement of Env-Ws 389 is short-sighted and could prove costly to many of the residents and businesses that rely on that aquifer for their drinking water. Without sufficient baseline water quality data being provided during the pump test process for those water-users located within the source water protection area, there is no way to identify whether elevated levels of uranium and/or other constituents were caused as a result of the large groundwater withdrawal pumping by the applicant or previously existed. This will require the private well owners to incur the cost of treatment systems, which will be costly and prohibitive for many.

**Thus, until the applicant completes water sampling testing for uranium and other constituents this application should be considered premature, not in compliance with Env-Ws 389 and be denied.**

Another issue that concerns me is the short length of the pump test (1-2 days versus 10-days). When the original pump test occurred in November 2002 under Env-Ws 388 the test lasted for 10-days. However, under Env-Ws 389 the period was greatly reduced and may have tainted the results.

**Thus, until another pump test is completed for a 10-day period, this application should be considered premature, not in compliance with Env-Ws 389.11(d)(3) and should be denied.**

Your cooperation on this important matter will be appreciated.

Sincerely,

James H. Harte

PO Box 104

W. Nottingham, NH 03251

cc: Robert Varney, EPA Administrator, Region One  
Frank Delgiudice, Chief, Permits/Enforcement, Army Corps of Engineer, New England District  
Township of Northwood, Nottingham and Barrington  
Alice Chamberlin, Governor Lynch's Environmental Policy Advisor  
Cynthia Copeland, Strafford Regional Planning Commission

August 24, 2005

Exhibit E

Brandon Kernen  
NHDES-WSEB  
PO Box 95, 29 Hazen Drive  
Concord, NH 03302-0095

**RE: Comments on USA Springs Application for New Sources of Bottled Water (Env-Ws 389)**

Dear Mr. Kernen:

Given the unknown bedrock contamination issues yet to be resolved in the Nottingham, Northwood and Barrington aquifers and watersheds, I am opposed to DES granting any waivers on this project under the Env-Ws 389 rules. NH State Representative Tony Soltani's request for an expedited review and rubber-stamping of this application should not be granted. Creating another contaminated superfund site in this area should not be a DES priority nor would it be considered in the public good.

As you know, although I had requested an extension on August 14<sup>th</sup> for municipalities and other stakeholders to submit written comments on this application since they had not even received the documents yet to review. However, you declined that request on August 16<sup>th</sup> because you wrote "there is typically no public comment period for Env-Ws 389 applications. The majority of the application references data that has been on files for years. Therefore the public comment period will remain the same". Ironically, you identify this application as being "typical". After more than \$500,000 has been spent in unfunded mandates by the towns, I do not consider this application to be "typical".

Given the extenuating circumstances regarding the water quality of all of the USA Springs wells, I believe that the appropriate boards and commissions in all three municipalities should have been able to review this application and respond to it. During the 18 years that I have lived in Northwood we have been dealing with contaminated groundwater with very little knowledge on the fate and transport of those contaminants. In talking with Barrington water district officials they have been dealing with the Tibbetts superfund site for years as well with no end in site, especially with the plume moving in another direction.

According to Dr. Peter Thompson, a geologist and UNH professor, all of the USA Springs wells tested high for uranium and are above acceptable levels. Thus, they will definitely have to remove the uranium in addition to radon before they attempt to sell it as "natural spring" water either domestically and/or overseas. That whole area is underlain by the Barrington granite pluton with pegmatite dikes, known to have high radioactivity. **Before this application should be processed (regardless of Rep. Soltani's objections and lobbying), this issue needs to be dealt with before proceeding with a bottle water permit.**

Another issue that was brought to DES's attention almost four years ago is that the large amount of groundwater that USA Springs proposes to pump could release more oxygen into the groundwater and mobilize arsenic that naturally occurs in the bedrock. It was recommended to DES back then that bulk rock samples from the USA Springs well sites be compositionally analyzed for arsenic compounds. **This analysis should be done before proceeding with a bottle water permit.**

Rather than for DES to cater to USA Springs and Rep. Soltani by granting waivers and by putting this application on a fast track, I would strongly recommend that ENSR International be used to oversee this application process. Based on their expertise and their independent review of Env-WS 388 and their March 19, 2003 report issued on the 10-day pump test, they certainly are not prone to political pressure or rubber-stamping applications. Since DES is still under contract with ENSR their observations and recommendations would be very difficult to challenge. Moreover, it would take it out of the realms of the political pressure and Rep. Soltani's influence.

Your cooperation will be appreciated.

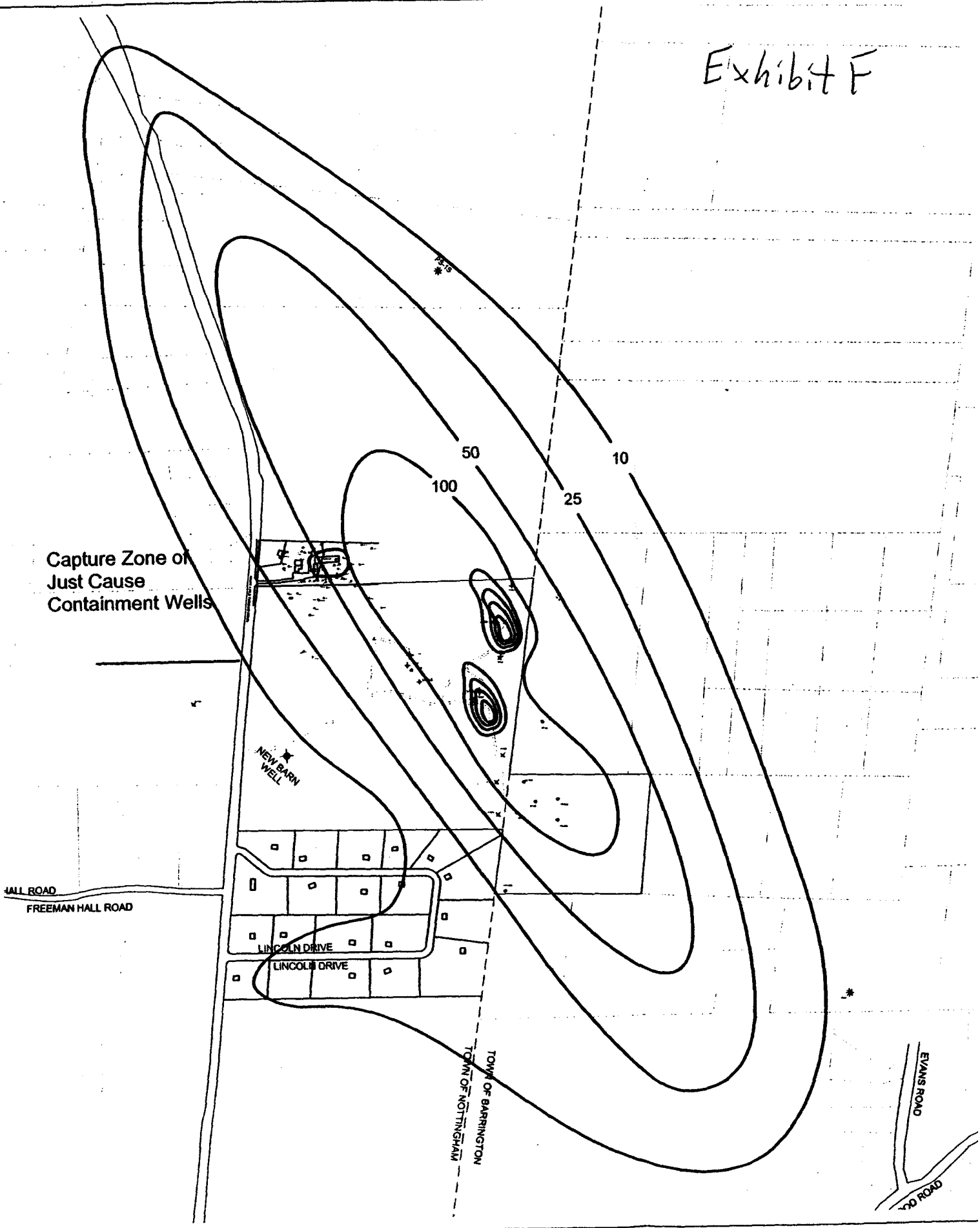
Sincerely,

*James Hadley*  
James Hadley

PO Box 114  
W. Nottingham, NH 03291

cc: Robert Varney, EPA Administrator, Region One  
Richard Roach, Administrator, Army Corps of Engineer, New England District  
Towns of Northwood, Nottingham and Barrington  
Alice Chamberlin, Governor Lynch's Environmental Policy Advisor

# Exhibit F



# **Performance Partnership Agreement for Federal Fiscal Years 2005 - 2007**

State of New Hampshire  
Department of Environmental Services  
29 Hazen Drive, P.O. Box 95  
Concord, NH 03302-0095

**Prepared By:**

The New Hampshire Department of Environmental Services  
and the U.S. Environmental Protection Agency New England

**Governor John H. Lynch**

**Executive Council**

Raymond S. Burton, District 1  
Peter J. Spaulding, District 2  
Ruth L. Griffin, District 3  
Raymond J. Wleczorek, District 4  
Deborah Pignatelli, District 5

**DES Senior Leadership Team**

Michael P. Nolin  
Commissioner

Michael J. Walls  
Assistant Commissioner

Harry T. Stewart  
Water Division Director

Robert R. Scott  
Air Resources Division Director

Anthony P. Giunta  
Waste Management Division Director

Susan Carlson  
Chief Operating Officer

Timothy Drew  
Public Information & Permitting Unit Administrator

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## **Public Participation Policy - (Established December 2000)**

### **I. Introduction**

**A. Purpose:** The New Hampshire Department of Environmental Services (DES) promotes the active and comprehensive participation from the public as an essential component in the Department's decision-making. This policy is intended to ensure that public participation is an integral and effective part of Departmental activities, providing a mechanism for bringing a broad range of diverse stakeholder viewpoints and values into the Department's decision-making processes. This early and on-going public involvement enables the Department to make more informed decisions, improve work quality through collaborative efforts, and build mutual understanding and trust between the Department and the public it serves.

**B. Scope:** This policy is designed to function as a general framework within which all Department programs operate. The policy is not intended to limit any legal requirements imposed by law, regulation, or contractual agreement; nor does it modify any legal rights available to the public under current law or rules. Certain DES programs have additional specific public participation requirements (*e.g.*, hearing notification lead times); these specific requirements shall be adhered to along with the general public participation processes described herein. In the event of any direct conflict between general policies and specific requirements, the specific requirements will prevail. This policy is not intended to apply to case-specific enforcement-related decisions. Public input regarding enforcement decisions has been and will continue to be sought in the context of DES's Compliance Assurance Response Policy (CARP).

### **II. Goals**

DES's public participation goals are as follows:

- A. DES will actively solicit public input and will consider the views of the agency's stakeholders and the general public in making decisions.
- B. DES will strive to ensure fair and equitable treatment of all New Hampshire citizens as it invites public participation in the implementation of state environmental statutes, rules, programs, and policies.
- C. In order to provide the opportunity for meaningful input, stakeholders will be brought into the process as early as possible.
- D. DES will, to the extent possible, provide data and analysis in a timely manner and in an understandable format to enhance the ability of stakeholders to participate constructively in the issue or issues under consideration.
- E. DES will respond in a complete and timely manner to requests under the N.H. Right to Know Law (RSA 91-A).
- F. This policy will be consistently incorporated into the Department's programs, and DES will strive to ensure that every DES employee understands and shares responsibility for the implementation of this policy.

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### III. Basic Principles

DES's public participation goals, set forth above, are based upon the following principles:

- A. Public participation helps to identify important issues. Decision-making benefits from a diversity of opinion and expertise. When afforded the opportunity, interested citizens with varied backgrounds and experiences can contribute useful information, historical data, and new perspectives to the decision-making process. The public may help identify issues and alternatives that might not arise through other means.
- B. Public participation fosters greater public confidence in DES's programs. A good public participation program enables those who are interested in or affected by a proposal to have an opportunity to influence the decision-making process. Presenting information openly, evaluating issues and alternatives fairly, and following through on commitments builds credibility for the eventual outcomes.
- C. Public participation helps advance DES's environmental equity policy. Timely opportunity for informed public participation is a key part of meeting the intent and purpose of Title VI of the Civil Rights Act [1964], Presidential Executive Order 12898 of 1994 and the Department's Environmental Equity Policy of September, 1994.
- D. Public participation enhances mutual understanding. Public participation activities promote communication and improve understanding among involved parties. DES can better understand the effects of proposed actions on the public and the environment by hearing from those potentially affected. By responding to comments and questions, DES can help the public understand the technical aspects of a particular proposal, as well as the broader policy, political, and legal framework within which DES must make its decisions.
- E. Public participation results in better decisions. Public participation helps DES make informed decisions that take into account the public's views on, for example, legal, technical, environmental, economic, and social issues. When a decision acknowledges disparate views and provides reasons why other views were not accepted, it is more likely to be implemented more successfully.
- F. Public participation generally enhances community support and minimizes delays. Effective public participation will not eliminate all conflicts and controversies. However, providing the public with a voice in the process will likely help reduce concerns about a proposal. Public workshops, meetings, hearings, and other communications provide information and, in the process, help dispel rumors, fears, and misunderstanding.
- G. Public participation builds trust. Public participation activities succeed when conducted in a spirit of openness and forthrightness and with a genuine opportunity for a diversity of information. On-going two-way communication, conducted in an atmosphere of courtesy and civility, is crucial for the exchange of ideas that enhance trust between the public and DES.
- H. Public participation is most successful early in clearly defined planning and decision-making processes. It is important that DES personnel, other government officials, stakeholders, and the general public be integrated into the planning activities and decision-making processes at an early stage.
- I. Public participation can be enhanced by creating stakeholder advisory groups. DES recognizes that soliciting advice from stakeholders with knowledge and expertise in particular fields can be beneficial to developing viable state programs and regulations. Stakeholder involvement can occur through such entities as special work groups, task forces, or other advisory bodies. This is particularly valuable in helping DES to address significant public policy issues, environmental initiatives, and regulatory requirements.
- J. Public participation involves a variety of communication tools. It is necessary to use a full range of tools to engage the public.

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## **Environmental Data Quality Policy** - (Established June 2001, Rev. December 2004)

**BACKGROUND:** The mission of the New Hampshire Department of Environmental Services (DES) is to help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire. In carrying out its mission, DES relies upon many types of data that enable it to better evaluate existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences. Data is used for setting priorities and strategic direction, targeting inspections, measuring compliance, identifying violations, measuring progress and trends, measuring ecological health, and many other purposes. This data is critical because it can affect DES's direction and emphasis, determine whether an enforcement case will be successful, dictate which option will be followed to address a problem, document a problem, or demonstrate progress to the general public and the General Court.

**KEY PURPOSE:** The data DES uses must be credible, of known quality, and the quality and quantity of that data must be appropriate for its intended uses. To accomplish this, everyone at DES must understand how his or her activities affect data quality issues, and all staff must know what they have to do to help produce quality data.

**POLICY STATEMENT:** *The Department of Environmental Services will ensure, within its authority, that all of its programs deliver data of known quality to allow all parties to make appropriate decisions about the environment in New Hampshire.*

**IMPLEMENTATION STRATEGY:** DES's data quality management efforts will follow written plans and guidance, which each program must generate. Copies of this policy will be provided to all staff via e-mail and the DES Intranet. The *DES Quality Management Plan (QMP)* provides guidance for all DES programs. Following the QMP, all programs will prepare written standard procedures for sampling, testing, gathering information on field conditions, checking and validating this information, and reviewing their data quality systems. All programs will ensure that the purpose of every data gathering effort is understood by their personnel. DES has assigned a Quality Assurance Manager, Assistant Quality Assurance Manager, and a Quality Assurance Team, comprised of representatives of programs throughout DES, to lead these efforts. All DES programs will have written data quality guidance, in accordance with the DES QMP. All DES programs will review their data quality systems annually, and will report the results of that review, including recommendations and actions for improvements, to the Quality Assurance Manager.

**NOTE:** This policy is subject to revision. It is the responsibility of all employees to ensure that they are familiar with the most recent policy.